A 000 000 000 4

Digitized by Google

Digitized by Google

PUBLIC LIBRARY
244994B
ASTOR, LENOX AND
TILDEN
R 1911 L

MOTOR AGE

VOL. VIII. NO. 14 CHICAGO, OCTOBER 5, 1905 $2.00 Per Year

EUROPE FINISHES YEAR'S CALENDAR

GENERAL VIEW OF MOUNT VENTOUX, WHERE HILL CLIMB OCCURRED

Paris, Sept. 23—With the Mount Ventoux hill climb, the Semmering hill climb in Austria and several minor events, the motoring competition in France for this year practically came to a close. The season wound up with the 2 days' meeting, and the French can rest content after a campaign of the greatest brilliance, which included every kind of a competition that tends to develop the weakness in automobile construction and furnish the manufacturers with ideas on how to improve their product. There have been road races galore, hill climbs of every sort and description, and long tours which have attracted international attention. Of course the automobile proper has received the most attention on the part of the promoters, but the others have not been overlooked, the motor boats, tri-cars and motor cycles having all come in for their share.

France can well be satisfied with her record. The Bennett cup race, won by Thery, redounds to the credit of her makers, especially the Richard-Brasier people, while in the classic Ardennes circuit race French colors were again home first in Hemery's Darracq car. The great Pyrennes tour, vying as it did with Germany's Herkomer, was an unqualified success, M. Sorel vindicating the merits of the De Dietrich, sixty-four racers taking part in the long trip. While France was not officially represented in the Harmsworth cup contest for the motor boat championship, she put one over on the English in the cross channel race in which La Rapiere succeeded in gaining the verdict over the English Napier. The three-wheelers have had an opportunity to demonstrate their worth and did so in the Flino cup affair in which they showed their fine points in a dash along the flat and in a strenuous hill climb at the finish.

Motor cycles have had almost as big a show to win public applause as the automobiles. Nearly every meet held in this country this year has had motor cycle events on its card and innumerable records have been made by Cissac, Lamberjack, Demeester and others. It's true France lost the international motor cycle cup over the Dourdan course, when the Austrian, Wondrick, finished first and lifted the cup held by Demeester, but this is about the only black eye France has received on her own soil in this line.

FINE STRETCH OF ROAD ON SIDE OF THE MOUNTAIN

Abroad, French drivers have not done so well, the Florio cup especially being disappointing, for here an unknown—Raggio—cleaned up the cream of Europe, Duray, Hemery, Rougier, and Gabriel of the French team being obliged to take his dust, figuratively speaking. However, France expects to retrieve this disgrace in the Vanderbilt cup race in your country, despite the fact that the early talk makes Italy favorite. Of course, Parisians would feel safer if Thery and Caillois were in the American event, but still they are confident of the ability of Duray, Sisz, Wagner, Heath and Hemery to bring home the trophy; but what we will do with it if we get it is a question that is worrying some of the confident ones. The Bennett cup is already a white elephant on our hands and if we get the Vanderbilt, too, we will be even more nonplussed—and busied.

The Mount Ventoux hill-climb mentioned above did not bring any too much glory to France, for her greatest rival, Italy, slipped in and carried off the premier honors. It was a brilliant affair, though, and the average Frenchman is too good

Digitized by Google

TAKING A CORNER
COLLOMB IN A MORS

a sportsman to deny proper credit to even his greatest foe. New records were set in nearly every event and Cagno and his Fiat were the stars of the meet. Cagno climbed the 21-kilometer slope in 19 minutes 13 seconds, which beats by 2 minutes the 1904 mark established by Rougier. The latter was in the same competition and on him rested the hope of the French contingent. He did nobly, but a better man was in the climb. Driving a big De Dietrich, Rougier broke his own record, but his time of 19 minutes 45 seconds was excelled by Cagno, driving his all-conquering Fiat.

Cagno showed himself a master hand at the wheel. No one will question his ability when it is considered that he climbed the 21 kilometer slope at the rate of 67,500 kilometers an hour. The ascent is 1,600 meters, so that he went up at the rate of 84 meters a minute, or nearly 1½ meters a second. The Fiat car he drove is a four-cylinder 130-horsepower affair. It has four speeds, the transmission is by chains, the sparker is a Simms-Bosch and the pump is of centrifugal design.

In the runabout class De La Touloubre, in a Darraeq, covered the distance in 25 minutes 39 4-5 seconds, an average of 49.135 kilometers per hour, beating the previous record of 29 minutes 59 seconds, held by Albert.

In the motor cycle class Lamberjack and Demeester triumphed on the Griffon. Lamberjack finished first in 25 minutes 48 1-5 seconds, an average speed of 148.837 kilometers an hour, beating the 1904 Ingilbert record of 32 minutes 20 seconds. Demeester was second in 28 minutes 35 1-5 seconds. Robert's machine skidded at the start, throwing the rider, who pluckily remounted and finished fourth in 39 minutes 33 seconds. He rode a Buchet machine.

There were several minor breakdowns in the big car competition to mar the sport. Vitalis blew out a spark plug and finished on three cylinders. Collomb did the same, while Hemery put on his brakes too abruptly and burnt out his clutch. De La Touloubre's machine nearly overturned early in the contest else he might have made a much better showing in the runabout class, which he, however, won.

Competition for the Hunziker regularity prize was keen. Medals were offered to the touring or racing cars making the best average speed over 1 kilometer, 5 kilometers and in the hill climb. In this competition Collomb, in a Mors, scored 343 points in class for racing cars. In the touring type event Mottard, in a Chantiers de la Buire, scored 266 points; Rob Berliet, 250 points and Fabre, in 205 points. Demeester carried off motor cycles, scoring 253 points o fon. Lamberjack, on a Griffon, w with 246 points, while Robert, on was third with 237 points.

The first day's contest resulte setting of two new marks—one i tor cycle class and the other in th 8,000 francs cars. Ruamps mad kilometers in 27 minutes 9 secon ing the previous mark of 31 minu seconds. He rode a Griffon mo Rivierre, in a Cotterau, made the in 56 minutes 15 seconds, the pre ord being 1 hour 15 minutes 4

The results of the second day follows: For large cars—Cagno, in 19 minutes 30 seconds; Rougie trich, second in 19 minutes 45 se talis, Rochet-Schneider, third i utes 27 1-5 seconds; Collomb, Mo in 22 minutes 59 2-5 seconds;

Automoto, fifth in 28 mi seconds. De La Toulo Darraeq, won the runa in 25 minutes 39 4-5 sec finish in the motor cycle Lamberjack, minutes 48 1 first; Demee fon, 28 minu seconds, sec Magali, 37 seconds, thir Buchet, 39 seconds, Ruamps, G minutes 58 s fifth at the

That the Ventoux con unqualified admitted o In previous speed cars w to compete time the t and other admitted. was crowde cles of ev

THE SUMMIT OF MOUNT VENTOUX

LAMBERJACK ON A GRIFFON MOTO

Digitized by Google

tion known to the motor world. One fatal accident marred the meet. Marcel Rol, a photographer of motoring events, who has done nearly all of MOTOR AGE's work in this country, was thrown from Collomb's car and killed. He was riding down the slope with the driver of the Mors when the spill occurred, Collomb and his machinist escaping with a few bruises, while Rol's skull was fractured, death resulting instantly.

From Vienna comes the news that for the third consecutive time Braun won the Semmering hill-climb on the 17th instant. In 1903 he scored his first success, driving Clarence Gray Dinsmore's 60-horsepower Mercedes. The following season, driving Mr. Dreher's 80-horsepower Mercedes he won again. This year, in a 100-horsepower Mercedes, he again won in the racing class, accomplishing the climb in 7 minutes 50⅕ seconds, an average speed of better than 75 kilometers an hour up a grade of 10 kilometers, with average rise of 1 to 25. Braun's time last year was 8 minutes 11⅘ seconds. Zeitlinger, in a Peugeot, won in class I in 20 minutes 40⅖ seconds; Arnold, in a Mercedes, won class II in 15 minutes 16 seconds; Hieronymous, in a Spitz, won class III in 13 minutes 23⅗ seconds; Mueller, 40-horsepower Mercedes, won class IV in 13 minutes 33 seconds time.

Cissac has astonished the motor cycle world by covering 90 kilometers, lacking only 105 meters, in 1 hour, while his time for 100 kilometers was 1 hour 6 minutes 46⅘ seconds, which sets a record the experts believe will stand for some time. The test was made in the Parc Des Princes. The Thomas record of the previous day in the Hydra cup contest was beaten by 3 minutes. Thomas made his record on an Aleyon machine fitted with a Buchet motor and Dunlop tires. His time for 100 kilometers was 1 hour 10 minutes 34⅕ seconds. Cissac's test, on account of not having been made according to the Hydra cup rules, won him no prize.

With the close of the season the French motoring public is looking ahead to next year. The complications arising over the refusal of the Automobile Club of France to longer compete for the Bennett cup has upset all calculations. It is expected, however, to turn the mind of the French public from road racing to the more sensible pastime of touring. The success met with in the contest for the Pyrennes cup here in this country and the enthusiasm shown over the Glidden in America, the Herkomer in Germany and the other affairs like them has convinced the powers that be that there is a great future in store for this department of the sport. Preliminary interest in touring started with the sportsman match between Meyan, of France, and Siddeley, of England, in which a draw decision was given. M. Meyan then proposed that next year an international tour be arranged in which all the leading countries could be represented. Since then others have taken up the idea and it really looks as if next year the Automobile Club of France would promote an affair of such magnitude as will make even the most enthusiastic gasp with surprise. The route talked of includes all the principal countries of Europe. As yet, though, the affair is in embryo.

Another contest talked of is a race in which the tire instead of the car will figure. It has been demonstrated in road racing that unlimited speed can be gotten out of the car, but that the tires are unable to stand the strain. A race in which the tire makers would be obliged to furnish the sinews of war would prove interesting.

Hill climbs will undoubtedly continue in popular favor, while contests for motor cycles and tri-cars will be kept on the motoring calendar.

Not the least interesting competition in this country was the tour of commercial and military machines over roads in the vicinity of Paris. The test continued for 2 weeks and the work of the fifty competing vehicles was followed throughout with the keenest interest.

GIRY ON A SVELTE ROUNDING THE SHARP TURN ON THE ASCENT

GENERAL VIEW NEAR TOP OF THE MOUNT

CAGNO IN FIAT NEAR THE SUMMIT

Digitized by Google

VANDERBILT FIELD IS LINED UP

Trial Drawings Give Germany Right of Way and Jenatzy Is Selected To Start First—Baron de Caters Withdraws and Campbell Is Substituted—Accident to Chevrolet

New York, Oct. 3—There was a babel of voices and a confusion of tongues at the Automobile Club of America last night, where entrants, drivers, backers, tradesmen and race followers gathered for the final naming of the teams and the drawing for starting positions in the second international contest for the Vanderbilt cup. Lancia, fat and jolly; Nazarri, tall and dignified; Sartori, swarthy and morose, and Duray, blond and of the rah-rah college boy type, chatted together volubly in one corner. In another Christie, tall and fair-haired, and Tracy, argumentative and nervous, smiled at the over-confidence of the visitors, who were calmly leaving the Americans out of their calculations. The two barons—de Turckeim, Massenat and Neubauer—discussed the chances with dignified repose. Senor Conill, who won the Havana cup, was on hand to learn all he could and possibly put up an entry or two for next year's Cuban race. All the importers were there, each seeing no other possible winner but his own car. Newspaper men scurried about, hustling for interpreters for their interviews.

Behind closed doors the commission was considering the substitutions made necessary by the cabled withdrawal of Baron de Caters and the smash-up of the 120-horsepower Fiat by Chevrolet. Baron Turckheim was in the conference as general representative of the European clubs under the deed of gift. The result was that S. B. Stevens, as a member of the German club, was permitted to enter the 90-horsepower Mercedes, which he drove at Ormond, with A. L. Campbell, who piloted his Mercedes in last year's race, as its driver. On hearing of the Chevrolet accident Major C. J. S. Miller, with characteristic sportsmanship, had wired Hollander & Tangeman offering his 90-horsepower Fiat of track fame. As the Italian club had delegated the naming of its team to Hollander & Tangeman there was no question of their right to substitute Major Miller's car.

The substitution settled, Chairman Morrell announced that there would be a preliminary drawing for order of drawing, followed by a final drawing. Without much ado it was decided that Baron Turckheim should draw for France, Robert Graves for Germany, E. R. Hollander for Italy and A. L. Riker for America. Graves was lucky. He drew first draw and first position for Germany. France got second draw and second position, America last draw and third position, and Italy third draw and last position. So it was to be Germany, France, America and Italy as the order of the teams.

It was left to each team to determine the order of the starting of its own men. France decided to abide by the order of finish of the French trials—Duray, Wagner, Sisz, Heath, Hemery. The Americans granted Dingley and Tracy the first and second positions they won in the eliminating trials and decided the order of starting of the substitutes, Christie, Lytle, White—by lot. Germany and Italy named their starting orders arbitrarily and naturally chose Jenatzy and Lancia as leaders. All this made Jenatzy, Duray, Dingley and Lancia the pacemaking quartette for the race, and a lively bunch of four they will be for the others to chase.

The race will be started as near to 6 a. m. as possible, though it will probably be ½-hour later before the odds and evens are lined up on opposite sides of the road enacting Wagner's one, two, three; ein, zwei, drei; un, deux, trois, and uno, duo, tre, which will send them away at 1-minute intervals on their 283-mile journey.

There is a story afloat, by the way, that Wag is rehearsing the count for the start at a school of languages. The spectators will have not much over 5 minutes to wait after Sartori gets a move on him before the leader of the first lap will be hailed by Prunty's "car coming!" Will it be Jenatzy, Duray, Dingley or Lancia?

Though the majority of speculators and prophets are inclined to make Lancia the favorite, there are others, who do not forget that Hemery won the Ardennes circuit or that Duray has made decidedly the best average showing in this year's racing abroad. By the way, the score of the prominent Vanderbilt cup candidates this year among the Europeans has been as follows:

	Bennett	French trials	Ardennes	Florio
Duray	6	3	7	2
Lancia	.	.	.	3
Hemery	.	9	1	4
Nazarri	3	.	.	6
Wagner	.	4	4	8
Sisz	.	5	.	.
Heath	.	6	5	.

There has been little practice on the course of late. The Europeans, barring Keene and Jenatzy, have not yet had their cars long enough out of the custom house to get them in readiness for speeding the practice hours. The course was slippery today from last night's rain and White, Keene, Jenatzy and Cedrino contented themselves with cautious going. By the end of the week practice will be in full swing and then there will be actual times on which to base prophecies.

Saturday's steamers brought five Vanderbilt drivers and their cars. Hemery and Wagner, the Darraeq pair on the French team, and John B. Wor will pilot his own Mercedes as a m the German team, came by the New Lorraine bore Sisz, Renault and I Dietrich, of the French team. On also came Baron Adrien de Turcl will represent the sports committ Automobile Club of France at the

All the drivers were eager to route they would have to travel a day found all of them making e the course in touring cars. The enthusiastically coincided with tha cia and Nazarri, of the Italian te pronounced it, of course, far supe Auvergne circuit. They praised it face, easy grades and gentle curv of course, they saw that the ri curves and the two S jogs would negotiated with caution. All ex fore the week closed to have th cars ready for the early mornin spins. They will take up their q the course at once and begin th the route in touring cars.

Hemery and Wagner will be a Head hotel, which has been eng entirety for them and their Duray will be housed at Krug's, place Jenatzy is already stabled and Lancia are already at Porr with Cedrino, Chevrolet and Sart Italian team, having had the e leased for them by Hollander &

A bit of bad luck befell the I during this morning's practice, v 120-horsepower Fiat, which Ch to drive in the race, was put out ning. In driving the car at down the road near the W. K. Jr., estate, Chevrolet encountere ten turn on the road. In maki switch to negotiate it, the c struck a telegraph pole and t completely turned turtle and wrecked. Both Chevrolet and h Henry Schutting, a Swiss, were the car. Chevrolet escaped w bruises. Schutting was not s when the ambulance, which cam cue, reached the Nassau county Minerva, the physicians found ribs had been broken. The p declares, however, that he will and ready to take his seat besi in the big race. It is now prop Chevrolet to Major C. J. S. horsepower Fiat, which he has record-breaking success on the this season.

With the arrival of Baron c comes the interjection of the p pean controversy over the cor these international road racers. is quoted as prophesying that the last race for the Vanderbilt probability of the trophy bein one for reliability competition here received this suggestion incredulity and are taking off the nerve of the foreigner.

Digitized by Google

that France may not care to run the race in France, should she prove a winner, and that, perhaps, Italy and Germany may find their own races all they care to attend to at home, but there is no other expectation than that the cup will be returned to the commission to be raced for again on Long Island next year in the event of a European contest for it being either undesirable or impracticable, should a foreign team win it. Mr. Vanderbilt gave the cup for a perpetual trophy and to encourage American makers. France may think it has gotten all it can from international racing. America has not, though, and modestly believes it is just beginning to learn enough to play the game further with a bit more hope of success. No one fears that another Vanderbilt race will not be run. There are some even with the temerity to think that America has some chance to name next year's course itself.

Of the American cars only the White is now left on the course. Walter White makes a daily round of the route with it in the hours set apart for racing car practice. The two Pope-Toledos were sent to the factory last week for a final overhauling. It is planned to send the Locomobile to Bridgeport today. The Christie has not been reported on the course during the practice hours for some days.

CONTESTANTS STILL COMPLAIN

New York, Oct. 1—Discussion of the action of the racing board in the matter of the selection of the American team has continued with warmth since the promulgation of its choice. Even among those who expressed confidence in the patriotic sincerity of the board and admired the boldness of its play in deciding to take a gambler's chance on one or more of the quintet of undoubted high speed cars surviving and evolving a winner, the way the board went about it is pronounced inexcusably raw and without defense from a technical or diplomatic standpoint. Whatever reason there may have been for dropping the two touring cars on the ground that at their best they had no chance of winning, the opinion is general that the Thomas had won an undisputed right from its show, not only of speed but of endurance, to retain the place on the team it fairly won.

Harry Houpt wrote a vigorous letter of protest, to which Chairman Morrell sent the following reply:

Your communication of the 27th inst., addressed to the racing board of the American Automobile Association, received and has been carefully considered by me. When your entry was received for the William K. Vanderbilt, Jr., cup race of 1905, it was upon the expressed condition that if there were more than five entries from the United States, the racing board of the American Automobile Association should decide which of the entries might compete in the cup race. The eliminating trials held over the course on the 23d day of September, 1905, were held pursuant to that condition, and with the expressed proviso that the commission reserved the right to select the five cars which, in their opinion, would be most likely to win the William K. Vanderbilt, Jr., cup race. While the 1905 course might try the staying qualities of the car, it admits that extreme speed which must be possessed by any car that stands any show whatever of winning. Consequently the first essential demanded by the commission is speed, which, coupled with endurance, could win; but endurance minus speed has no chance whatever. Accepting your statement in regard to the broken battery box, still the commission was not satisfied with the general showing of the car and does not believe that it would stand as good a chance of winning the cup as the other cars selected to compose the American team. I regret sincerely that you should feel that you have been treated with any discourtesy by the commission, but the occasion called for immediate action in order to give the teams selected an opportunity to commence the necessary preparations at once. We had received and carefully considered the written report of your driver, Montague Roberts, and when you asked the commission for a personal hearing, the vote had already been taken and the team selected.

No formal protest was made by the Royal Motor Car Co. V. E. Minich, general manager of the Haynes Apperson Co., did, though.

After going into details concerning the rejection of the Haynes, Mr. Minich goes on to give his reasons why it should have been accepted. He said in part:

I feel that a word or two regarding our car and its ability to creditably represent the American automobile industry would be in place. While it is true that the car which we entered and drove is simply one of our 1906 stock touring cars, it does not by any means follow that it has not sufficient speed to stand a good chance to win the cup. This car has actually done better than 65 miles an hour on the ordinary pikes around our factory, and on suitable roads will do better than 70 miles an hour. The mere fact that we did not make as fast time as two or three other contestants at the eliminating trials does not signify. We have realized all along that it is a matter of great importance to our company to have the opportunity to show the world what a fast and reliable car we are building. I knew that if our driver put the car over the course at anything like its best speed he would be taking unnecessary risks, and my last word to him before starting was to caution him to drive slowly and carefully, timing himself only to finish among the first five. Had we realized that selection would be based upon the extreme speed that could be made in these trials his instructions and the outcome would have been different.

Mr. Minich also told of the mishap caused by an oiler going through the flywheel, necessitating two stops and a loss of 10 minutes.

WERNER WITHDRAWS

New York, Oct. 4—Special telegram—Clarence Gray Dinsmore, who with George Heath arrived yesterday, canceled Werner's entry to the Vanderbilt race on account of his being disappointed in getting his racing Mercedes from the factory in time to ship it. Werner was accordingly left behind.

Secretary Batchelder has telegraphed Henry L. Bowden suggesting that he substitute Flying Dutchman II, with Basle as driver. This is the 90-horsepower Mercedes with which Basle scored the former 10-mile track record at Providence and not the double-engine Mercedes which made the 32⅘-seconds mile world record at Ormond. The latter, being hastily built in America, would not be eligible.

All entrants for the race are now here. The Europeans are getting their cars ready to begin practice later in the week. Keene and Jenatzy, of the German team, are the only foreign candidates practicing with racing cars. The Fiats and Darracqs were clogged with oil from the Florio race and had to be taken apart and cleaned. Heath is equipped with two Panhards and Duray with two De Dietrichs. White makes daily trips over course during practice hours, covering two or three laps each day at an average rate of 32 minutes. Lancia, Hemery and Duray are the betting favorites with those who think they know.

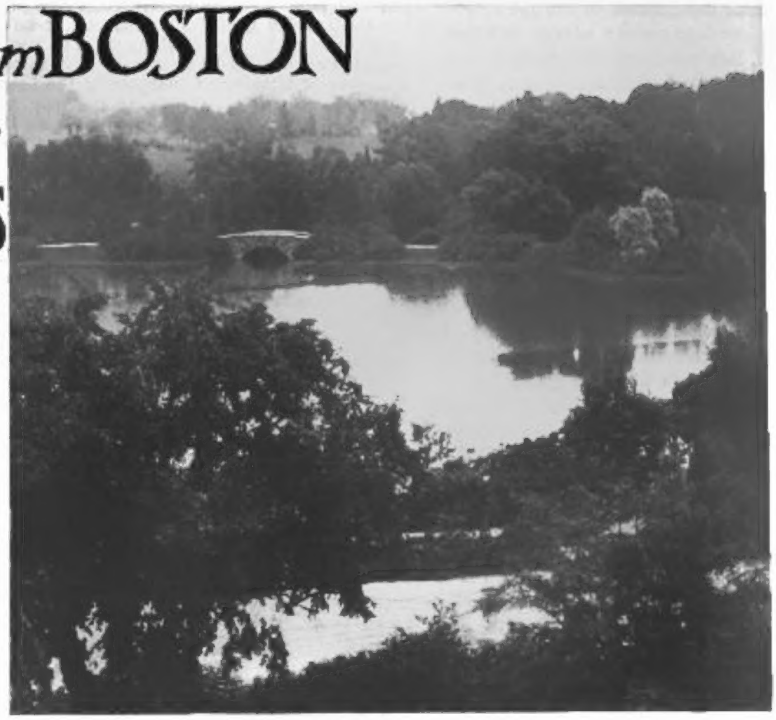
STARTING ORDER IN THE VANDERBILT CUP RACE

Start	Driver	H. P.	Car	Entrant	Team
1	Jenatzy	120	Mercedes	Robert Graves	Germany
2	Duray	130	De Dietrich	M. De Dietrich	France
3	Dingley	50	Pope-Toledo	A. L. Pope	America
4	Lancia	120	Fiat	Hollander & Tangeman	Italy
5	Worden	120	Mercedes	John B. Worden	Germany
6	Wagner	80	Darracq	Darracq Co.	France
7	Tracy	120	Locomobile	H. E. Thomas	America
8	Nazzari	120	Fiat	Hollander & Tangeman	Italy
9	Campbell	90	Mercedes	S. B. Stevens	Germany
10	Sisz	90	Renault	Renault Brothers	France
11	Christie	60	Christie	James L. Breese	America
12	Cedrino	120	Fiat	Hollander & Tangeman	Italy
13	Keene	120	Mercedes	Foxhall P. Keene	Germany
14	Heath	120	Panhard	Panhard & Levassor	France
15	Lytle	75	Pope-Toledo	A. A. Pope	America
16	Chevrolet	90	Fiat	C. J. S. Miller	Italy
17	*Werner	120	Mercedes	C. G. Dinsmore	Germany
18	Hemery	80	Darracq	Darracq Co.	France
19	White	40	White—steam	R. H. White	America
20	Sartori	90	Fiat	A. G. Vanderbilt	Italy

*Withdrawn

Digitized by Google

TOURING *from* BOSTON *to the* BERKSHIRES



THE ROAD AT BROOKLINE, MASS., WINDS ALONG PAST OLMSTED POND, CLOSE TO THE

ONE of the Pilgrim fathers, it is related, upon the approach of the vessel to the shores of Massachusetts, cried out, on beholding the beauty of the scenery, "This is paradise." So it may be truly said today that Massachusetts is the automobilist's paradise. In that state the tourist can find on every side patriotic, intellectual and scenic attractions such as are offered by no other state in the union. Massachusetts, an Indian name meaning "the land of big hills," displays at almost every turning tablets and monuments that recall the stories of great men, as well as the importance of great historical events.

Here are depicted the steps that led the colonies to provinces and from provinces to republic. Here may be seen the homes of those intellectual American authors who have placed America in her high position in the literary world. From Boston the hub of eastern motorists, one can in a few hours be in the heart of the Berkshire hills, where at an altitude of 2,500 feet he can bid defiance to the fiery glances of old Sol. Tiring of this altitude, the motorist can also in a few hours be enjoying the latitude—not geographically—of some seaside resort. A natural feature which gives beauty to the scenery of Massachusetts is specially observable in the multiplicity of fresh water lakes, called ponds. These ponds were favorite places with the aborigines who built their little steam baths on their shores.

In a word, in Massachusetts are blended together in all their most beautiful forms mountain, valley, river and seashore. Poets have sung of its rivers. Of one, the Connecticut river, Dr. Dwight has truly said:

"No watery gleams through fairer meadows shine;
Nor drinks the sea a lovelier stream than thine."

But all these inviting features would avail nothing to the motorist were that sine qua non absent—a good system of roads. What state in the union can present such an extent and splendid co of state and other roads as does chusetts? It now has over 600 n well-laid state roads, which are bei tinually extended. These roads spected sufficiently often to disco remove defects in a reasonable tim they appear. These roads are very ent from those that existed at t that E. Everett Hale's friend aske the condition of the roads to a town. The questioned countryman "Wall, naow! Both roads are bad; ever ye take'll be a durned sight the other. I wouldn't advise you t any at all."

Massachusetts, in consequence splendid system of roads, its magn varied scenery, the seaside, city a pleasures it offers, the artistical towns and cities, thirty-six of w within a radius of a few miles f state house, Boston, has become an ly automobile state. There are r 9,000 automobiles registered in t and this is a larger number, in pr to the population, than exists in a state. All over the state the bes modations are at hand for man chine. There are prosperous au clubs—two in Boston, each having bership of over 300, with the rank ing steadily from day to day.

JAMAICA WAY, BROOKLINE, MASS., CURVES PAST SHADY WOODS AND PALATIAL HOMES

NO PUNCTURE IN 1700 MILES

Mr. and Mrs. F. S. Dey have to Buffalo from a 1,700-mile au tour through Canada. The first t Dey said when he arrived was: way without a single puncture. used my pump except on the fron

Digitized by Google

COUNTRY·FAIRLY·ALIVE ·with· TOURISTS

AND THEN INTO FULL VIEW OF LEVERETT POND, NESTLING AMID RURAL BEAUTY

Mr. Dey drove a 40-horsepower Pierce Great Arrow car. Mr. and Mrs. Dey left Buffalo on August 28. Driving from Buffalo to Toronto they passed through some of the best agricultural lands of the dominion. They spent 2 weeks in and about Toronto during the fair. From Toronto they went by boat to Kingston and then drove through Cananoqua, Brockville and Smith's Falls to Ottawa where they spent a week during the Ottawa fair. From Ottawa their route led to L'Original, Carillon, Saint Hermos, Belle Riviere and Saint Scholastique to Montreal, where they spent 5 days taking some side trips in the delightful country of the French Canadians. From Montreal Mr. Dey drove to Vaudreuil, Coteau, Cornwall, Prescott, Brockville and Gananoque, to Kingston whence he went by boat back to Toronto and then home.

THREE WEEKS IN CANADA

Mr. and Mrs. P. L. Gregoire, Miss Grace Sheridan, Miss Katherine Welch and Chauffeur Peter F. Cote, of Lowell, Mass., returned recently from their Canadian trip, which lasted about 3 weeks and covered a distance of between 1,600 and 1,700 miles. The Canadian country was well covered and Montreal, Quebec, Three Rivers, St. Anne de Beaupre and several other places were visited. The party had many novel experiences in their journey through the farming districts, the natives crowding around their machine in open-eyed astonishment. Many of these had not seen an automobile before, to which fact was due their surprise and interest. The party found that automobiles were not in great favor in the northern country and had not attained the popularity that they have in the United States. In Quebec there are only thirty machines, while in Montreal there are not more than fifty. One of the troubles of touring through the farming country was due to the horses that were met with. Not being used to automobiles, the machine was forced to stop often for the purpose of letting the animals pass. While in Canada the party made the ascent of many of the hills and mountains that had never been climbed before by an automobile. The Gregoire cars, a Marion touring car, stood the test without a mishap of any serious kind. On the return trip a puncture was sustained on a road where macadam was being laid, but other than that the trip was devoid of accident. The beautiful Canadian country was thoroughly enjoyed by the party, especially the farmlands that are so prevalent in the north. Gasoline was bought for 50 cents a gallon in some of the towns, and it was considered a favor to get it at that or any price.

NOW ON LONG TOUR

One of the longest trips overland ever attempted by any motorist of the south, is a month's tour of the east which has been begun by John T. Landis, of Nashville, Tenn., president of the Landis Banking Co., ex-president of the Southern Automobile Co., and one of the most prominent stock brokers of the south, in his White steamer. Mr. Landis went to Cleveland via Louisville and Cincinnati and from Cincinnati to Buffalo, across the Berkshire hills over to Boston, and will reach New York city after a tour of that state in time to witness the Vanderbilt cup race on October 14. Mr. Landis is accompanied by B. F. Bell, formerly manager of the Southern Automobile Co.'s garage. At Cleveland, Mr. Landis secured the delivery of his 1906 White steamer and the remainder of the distance is being done in the new car. He expects to reach Nashville on the return trip the latter part of October, the latter part of the trip being through eastern states.

A SHADED BEND IN MASSACHUSETTS ROAD NEAR JAMAICA PLAIN

Digitized by Google

ANALYZES THE FOREIGN TRADE

French Writer Warns His Countrymen that Their Market in England Is Menaced—Britons Refuse to Buy Second-Hand Cars from Across Channel—Balk at Big Prices

London, Sept. 22—J. B. King, the secretary of the British Empire Motor Trades Alliance, an association of British manufacturers, whose object it is to further the interests of the British automobile trade in opposition to that of any other country, has issued to the press this week an article which is certain to obtain very widespread notice and comment. It is a literal translation of an initiatory epistle addressed to the French motor car trade by Georges Prade, one of the best known writers on the French automobile press, whose contributions have done much to make l'Auto the leading French organ of the sport. It is a somewhat remarkable thing that all the facts and figures which Prade uses to enforce his arguments and warnings, have been culled from the pages of the British motor press, yet until he marshaled them, labeled them and summarized their significance, only a few acute observers on this side had read their lesson aright. This is that Great Britain is the largest and wealthiest market open to the world's automobile trade, and that it transcends in importance to the French manufacturer even that of his own country. These facts had been stated by one or two observent trade writers even before the relative statistics appeared, upon which Prade has built his case. But his article has turned surmise into certainty. How much more important and popular automobilism is in Great Britain than in France is shown by the facts which Prade parades for the benefit of his self-satisfied countrymen, to the majority of whom the article has come as a disagreeable surprise. The number of motor cars registered for taxation in France is put at over 17,000; the number of cars similarly registered in Great Britain is over 32,000. For the 7 months of 1905, ending with July 31, Great Britain imported 3,857 motor cars of the value of $8,184,000, or equal to 6,642 cars for the 12 months, of the value of $13,996,800, or an amount greater than France will have expended on its own motor market over the same period—from January to August.

That is the portion of Prade's argument as it directly affects the French motor car manufacturer, whom he implores to study to the utmost the requirements of their English customers. But more startling still is his estimate of the manner in which Great Britain has tackled the task of supplying its own demands in the motor line. He estimates from the official British registration figures that, after deducting those representing the imported motor cars, British motor car manufacturers sold on the British market in 7 months 9,800 cars, or equal, in his view, to 18,000 for the year 1905. Prade, having proved to his satisfaction that the average value of the cars imported into Great Britain is $2,098.96, assumes that this is about the average value of the British-built car, and so finds that Great Britain will have spent $38,102,000 in 1905 on its home productions, which, added to $13,996,800 worth of imported cars, produces $52,159,200 as the trading value of the British motor car market for the current year. He contrasts these figures with the value of the American market to France, greatly to the disadvantage of America, which seems to have been, in his mind, unduly attracting the French manufacturer as a field for his activity. He endeavors to warn his countrymen of the danger to themselves which the rapid development of the British-made motor car trade constitutes, and seems to imagine that by increased attention to this market, rather than by opening up in America, the French motor manufacturer will be serving his interests best by hindering British expansion. Altogether he has produced an article which has caused little less than consternation in French circles, and has evoked the greatest surprise in Great Britain.

Taken broadly, his arguments and deductions are sound; taken analytically his figures and statements require reconstruction. There are not 32,000 motor cars in use in Great Britain; Great Britain will not have imported $13,996,800 of new motor cars, nor will our native manufacturers have sold $38,402,400 worth to their countrymen this year. These statements can be made with confidence. Prade, in estimating the value of our imports, has lost sight of the fact that every car which comes to these shores figures in in the returns which he quotes, but those returns do not state how many of them are British cars whose owners have been touring in them abroad or foreign visitors touring in this country, nor do they state how many of them imported into the kingdom for sale are second-hand machines.

Quite a large second-hand trade has been done between France and Great Britain up to quite recently. For some time France simply emptied its second-hand cars into London. But that trade is easing off, for the British automobilist is now discarding old or unsatisfactory cars in quantities sufficient to absorb the demand that has had to be supplied from France. This change is bound to be felt in France, if it has not already been. It was because a free, if not a good, market existed for their discarded cars that induced, or enabled, French motorists to purchase the f: design produced year by year by t own designers. At the same time loaded up our market with their discar stuff against our British manufactur who had to compete against it. The sence of that outlet cannot fail to con the French market to some extent, with the British market shrinking by son of the advance of the native Br manufacturer, the French trade is f: with the probability of a crisis. Its rival is merely a matter of time, its ex only limited by the progress of rival tions. Prade has simply deciphered handwriting on the wall. France ca continue to exercise the same influenc hold the same position in the motor w if its productive power is suddenly t reduced by one-half. Prade evid thinks that his countrymen are unwi pay so much attention to the Amer market, but he probably overlooks the that in doing that they are endeavorin find a way out of the situation which be created when the British trade out its French rivals in their present est market. You in America are b judges than we can be how far that on the part of the French trade ca successful; but even we can see that such success obtained must only be porary. It really looks as though automobile sun of France had begun t and that when it goes down it will be veritable Austerlitz of trade.

It has been freely stated that only or five French motor car manufact have been making profits this year the names given are Renault Brothers, hard & Levassor, De Dion-Bouton, ron, Girardot & Voigt, Gladiator and sibly Richard-Brasier. In this ca the number is equally small. A Daimler, Wolseley, Humber, Napier Thornycroft alone have any figures considering; the majority of other simply struggling to obtain a footi the market. What profits have been in these cases mostly have gone t retailer. The whole situation is one inated by scarcity of hard cash—perh blessing in disguise, for were capi the command of these struggling co the expansion of trade resulting probably be entirely inadequate to the outlay and disappointment an would ensue to the unlucky investors.

The explanation of the discrepan tween the 32,000 motor cars register the number in use—probably less th 000—is that when a second-hand car from one purchaser to another it is ally freshly registered, no trouble taken to annul the old number, lapses on December 31. That th produced and sold out of British fa this season will amount in value t 102,400 is computed on an average ation of $2,098.96. That is much to The foreign cars imported or broug

Digitized by Google

this country are considerably higher powered and higher-priced than the majority of the native cars selling. An average of $1,601 would be much nearer the mark, for you can get a very serviceable British-built four-cylinder touring car chassis 10-12 horsepower to carry four on the London market for $1,458, and that is likely to be the popular standard and price in 1906.

The market here, as well as in France, is gradually altering. The demand for cars of from $3,645 to $4,860 is fairly satisfied and only renewals are to be expected, consequently firms that have been competing for this market must of necessity produce something lower-priced if their works are to be fully employed or if they want to progress or prevent younger competitors from overshadowing them.

AGAINST FURTHER CONTESTS

New York, Oct. 4—Special telegram—At a meeting of the executive committee of the National Association of Automobile Manufacturers held today the following resolution was adopted by an unanimous vote:

Resolved, That this association is opposed to the holding of any further contests before the end of the present year, and that the contest committee be requested to consider what contests, if any, would be advisable during 1906.

The contest committee, consisting originally of Messrs. Waldon, Clifton and Davis, was increased to a membership of five by the addition of Messrs. Kittridge and Pope. It was stated at the meeting that the appeal in the licensed test, case commenced some time ago in New Jersey, will likely be heard within the next 5 or 6 days. Professor Lucke and Mr. Cashman, representing the New York School of Automobile Engineers, appeared before the committee and explained at length the details of the enterprise. The committee decided to return to the exhibitors at the Chicago show, who have exhibited at previous shows in proportion to the amount of space rental paid by them, half of the net proceeds of the exhibition.

IOWANS HAVE PARADE.

Cedar Rapids, Ia., Oct. 3—This is automobile day at the carnival. Sixty cars of all makes and models journeyed to the rendezvous to take part in a gala parade. With the visitors and the Cedar Rapids owners considerably over 100 machines were in line. After making a tour of the principal streets and avenues the parade concluded at Athletic park, where the annual carnival was in session. Several of the visitors who came to take part in the parade suffered torn and mutilated tires from barbed wire and other obstructions placed in the highway, presumably by the farmers. The Iowa towns which had from fourteen to one representatives in line were: Waterloo, Iowa City, Cascade, La Porte City, Newton, Des Moines, Walker, Belle Plaine, Maquoketa, Washington, Cedar Falls, Reinbeck, Nashua, Clarksville, Delmar, Onsis, Worthington, Vinton, Clinton, Sumner, Traer, Britt, Dysart and North English.

SNEERS AT CUP STORY

France Makes Light of Rumor That Bennett Trophy Will Be Put Up for Touring Contest

Paris, Sept. 23—James Gordon Bennett's recent visit to Italy, when he attended the Brescia meeting, has started the rumor along the boulevards that the donor of the international cup, which has now been raced for six times and which is now in possession of the Automobile Club of France, has decided to take it back and offer it to the Automobile Club of Milan, to be contested for in a big touring competition next year in connection with the universal exposition at Milan at the inauguration of the Simplon tunnel. According to the gosisps, Mr. Bennett conferred with the officials of the Milan club, who, encouraged by the success of their tour last year, were planning another for next summer, with $10,000 in prizes hung up. The result of this confab is said to have been the proffer of the Bennett cup for the tour, which induced the Milanese to raise the prize money from $10,000 to $30,000, in addition to the cup.

In a measure this announcement was a bombshell to the French, but after mature deliberation the wise ones made light of the rumor, pointing out that in the first place the cup is not Mr. Bennett's to give. It has been won by France and at the present time is in the custody of the Automobile Club of France, which, while refusing to contest for it longer, has not as yet handed it back to its donor. It would be unlikely, it is figured, that Mr. Bennett would so far forget his sportsmanship as to promise the trophy for a touring competition without at least consulting the present trustees.

The first rumor of the proposed action came from Milan direct instead of emanating from the officials of the Automobile Club of France, which would be most likely under the circumstances. This in itself is enough to cast suspicion upon the authenticity of the tale. The Automobile Club of Milan has been knocking road racing and boosting its tour and it is presumed here that this story about the Bennett cup was concocted to knock another prop out from under racing.

France having refused to compete again for the Bennett cup as a racing trophy and Great Britain's echoing these sentiments, does not necessarily mean that these two great nations would consent to the altering of the cup conditions, for France has the vote that counts and until Mr. Bennett gets the consent of the club the critics here do not see how it is possible for Italy to cut in and get the cup for a tour prize. Italy's right to hold the 1906 race for the Bennett cup in view of the fact that she finished such a good second, is not questioned. It is the tour story that makes it seem unlikely.

Bearing out the above belief comes a characteristic interview with James Gordon Bennett himself, who returned to Paris last night, in which he denied that he has decided to alter the terms of competition.

"I no longer own the cup," said Mr. Bennett, "and it belongs to the Automobile Club of France, to which it was given to encourage the manufacture of automobiles. Its disposition will be left to the international conference, which will meet in Paris in December. I may say that I am not opposed to the giving of the cup to a great international endurance test."

TRADE HIRES METALLURGIST

New York, Oct. 3—Announcement was made yesterday that a group of the biggest American makers here have entered into an arrangement with one of the biggest concerns in the steel industry, to carry forward scientific experiments, until it has been ascertained, positively, just what grades and compositions of metal are best for the production of a perfectly safe and reliable car. Under the new arrangement a man accounted the cleverist metallurgist in the country and employed by the steel interests, will work together with a metallurgist employed by the makers to ascertain just what grades of material are best for each feature of construction. The concerted action was taken by the group of manufacturers who are members of the Association of Licensed Automobile Manufacturers. Henry Souther will be the metallurgist representing the automobile makers and he will work with the steel interests to solve, not only the question of the best grades of steel for engine and body parts, but also the best compositions of metal for bearings and all other purposes.

PLAN CONSOLIDATION

Hartford, Conn., Oct. 2—A proposition is soon to be brought forward for the amalgamation of the Automobile Club of Hartford and the Hartford Yacht Club. The automobile club is to have temporary quarters for the winter and the yacht club is soon to build a swell new club house in Hartford. The club now has a house in Hartford which is to be rebuilt, while elaborate stations with quarters and dining service are supplied at Fenwick, New London, Crescent Beach and Fishers Island. The yacht club is 11 years old and is the fifth largest in America in point of members and size and pretentiousness of fleet. Each club will retain its original name.

JUDGMENT AGAINST BOYD

Washington, D. C., Oct. 3—Special telegram—The government today obtained judgment for $9,000 against James W. Boyd, president of the Columbia Automobile Co. Judgment was also entered in favor of the government against certain automobiles and other personal property belonging to Boyd. The property will be sold at auction to satisfy judgments.

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office
American Publishers
Bureau 56 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the
Trade Press Co·N·H·Van Sicklen
Manager·Telephone Harrison 4410

Member National Association of Automobile Manufacturers Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year·Foreign subscription four dollars
The Western News Co·of Chicago and its branches
supply newsdealers·Entered at the
Chicago postoffice as second class matter

IS ROAD RACING DOOMED?

WITH the running of the Vanderbilt cup race a week from Saturday the last of the big automobile road competitions of the year 1905 will have been completed and the case of Racing vs. Touring will go before the Court of Public Opinion for a final verdict. The evidence produced during the summer months has been favorable to the touring side of the case and those who profess to be able to read the handwriting on the wall declare they can see thereon the doom of racing, claiming it has served its purpose and the manufacturer no longer needs such competition to show him the faults in his car. He has passed the rudimentary stages of such education and looks to the higher grades for information on the public's need. He gets this from the big tours and so far they have proved of great value. It took little to kill track racing, for it was a hybrid anyway, catering more to the pockets of the promoters than to the education of the maker. Beach racing still exists, as it undoubtedly has a right to, being practically harmless from the danger point of view, furnishing some ideas of value to designers working with a view to developing speed, and furnishing harmless excitement to the great American public, which craves things whose very fabric is sensationalism.

It cannot be said road racing has not had a fair trial, for witness the big events of the past season—the Bennett, the Ardennes, the Florio and, lastly, the Vanderbilt. There is a certain satisfaction in being able to record that these great contests have been successfully run without accidents to competitors or spectators such as would furnish food for the motorphobia press, which would relish such a morsel.

These races have demonstrated nothing except that it is possible to build cars that can maintain unlimited speed—speed such as no law-abiding citizen would wish to use. In this respect the car has outstripped the tire, for it is here the weak spot exists. Now that this has been demonstrated, is it not time that the car be left alone and that future experiments along the racing lines be conducted for the main purpose of improving tire endurance and reliability?

Summing it all up, one cannot help but believe that there must be some fire behind the smoke that arises with the rumors regarding the future disposition of the Bennett and Vanderbilt cups. That the maker would be better served if James Gordon Bennett turns his international trophy over to the Automobile Club of Milan for a touring contest instead of a race and that more good could be derived from the trophy of William K. Vanderbilt, Jr., if he changed the deed of gift so that his cup could be used for a similar purpose, is certain.

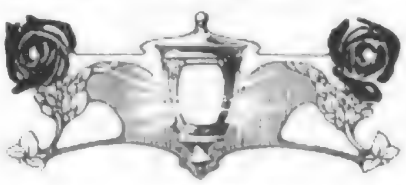
Let any sane motorist weigh the evidence at hand and decide for himself if he would not be better served with each of the great nations promoting tours instead of races—tours in which everyone has a chance, the man who motors for pleasure and the one who does it for hire.

FRANCE IS WORRIED

BOTH England and the continent of Europe are at present stirred up over the facts and figures of a French writer, who shows that beyond doubt England is the market par excellence for the French makers if they will but cater to English needs, conditions and demands.

Mr. Prade, the writer, figures that Great Britain has not to exceed 32,000 automobiles in use and that France is somewhat behind this, with but 17,000. What Mr. Prade says will interest the makers of his own country, who are doubtless seeking some outlet for their products. They have had a small amount of trade with the United States, but it is an insignificant one, inasmuch as the prices which are asked for imported machines do not appeal to the average American when he knows how much more he can purchase at home with the amount of money that would be required for the purchase of a French or German automobile of any size or make.

The figures given to show the number of machines in use in Great Britain and France together fall short of those which represent the number of American machines on the roads. Only ten eastern states, including New York, have a representation of over 10,000 for licenses granted to operate



automobiles during the first half of th present year. Chicago alone is represente by over 3,000, and such cities as Clevelan Pittsburg, Philadelphia, Detroit, St. Loui Minneapolis, St. Paul and the Pacific coa cities are veritable hotbeds of automobil and automobilists. The people of the cou try have, in short, entered and possess the land of motordom.

Last year alone it was conservatively e timated that American makers produc something like 35,000 automobiles, and it safe to assert that very few of these we exported. The past 3 years have seen t automobile trade in America grow alm out of bounds, so that today there must close to 100,000 machines in use in the d ferent parts of this country.

Each year the American market is cl ing to the foreign maker, partially becau the average American does not wish a cannot afford to pay the high prices th are demanded for the imported machi The American would prefer to take three four American cars, strung out over as ma years, than to have one French car of value equal to the three or four Ameri productions.

It is pretty safe to assert that while French maker is looking about for a m ket for his surplus, and is casting his on English soil, the American maker keep on improving his product and at same time will be selling machines r under the nose of the French maker. T time is not so far off, either, for alre the American exports of automobiles are stantly on the increase and a week sel passes that the American car is not he from in Europe's automobile trade in s form or manner.

MOTOR AGE'S CHANGE

THE CHANGE in the size of M AGE, with this issue, has been r for a number of reasons, any of which is sufficient excuse for the lisher to offer. The chief reason is owing to the former size, advertisers compelled to make cuts of a special for MOTOR AGE, not only causing exp but delay as well to both the advertiser to MOTOR AGE. The new form will pe the use of cuts such as are made for automobile publications and will thus a saving to the advertiser. The new being the same as other automobile pul tions, will also permit of MOTOR AGE filed with greater ease.

The general style of MOTOR AGE wil be altered. That is sufficiently satisfa to meet all present demands, both as t the reader and the advertiser may be cerned. But this must not be taken indication that MOTOR AGE is to stand It will continue to be what it has bee best publication of its class, giving reader more and better reading matter week to week, and thereby giving the a tiser more by its constantly increasin culation, evidenced by the publicati its postoffice receipts from week to

Digitized by Google

Jump Sparks

Evidently Chevrolet was training to touch only the high spots in the big event.

Mr. Morrell and the baseball umpires seem to be having a hard time of it just now.

The excellent weather the country has enjoyed of late has been good for motoring and the Standard Oil Co.

One can imagine what the eliminated drivers will say if the cars which replaced their own on the American team should fall down in point of speed or construction.

Now even the best of the English people have begun to balk on paying fancy prices for cars and have even hinted that they are through with some of the French creations unless prices drop a few shillings.

Motor car accidents are numerous, it is true; but they are quite as freakish as numerous. M. Rol, the MOTOR AGE photographer in Paris, was killed a short time since, and the peculiar part of it is that, being thrown from a car, he was thrust against the only post within 150 meters of the spot where the machine came to grief. If this isn't a case of ill luck then no matter.

The farmer is not an advocate of good roads. Not that he doesn't want them, but because heretofore he has had to bear pretty much all the burden himself for the use of others, as he at least thinks. When the farmer has become an automobilist himself he will warm up to the necessity of decent highways and will be an advocate of state aid. The motoring organizations and the makers could accomplish more for good roads by interesting farmers in the purchase of automobiles than in any other manner.

An old Illinois resident saw a farmer twist his starting crank once, hop in his car and hike off for the farm at 15-mile speed. Naturally it set him thinking. He remembered how he used to ride on hay racks and had to drive 50 or 60 miles with an ox team to procure provisions. He was, after all, far seeing, for he remarked: "Twenty years hence the farmers all over the country will spin into town in their own automobiles. The oxen and the horses will be in the pasture, the hayrack will be in the barnyard, and the family to and from church will go thundering over the macadam roads in an automobile." Wise man! Good prophet!

Last Sunday in Chicago a woman was knocked down by an automobile. She was *not* killed but was reported as severely injured. To this the Chicago Tribune devoted a full column of space with display head on its first page. The same day a trolley car ran down and *killed* an 8-year-old child and the motorman was nearly mobbed. To this the Tribune devoted sixteen lines of reading matter and a five-line heading and tucked the story away on an inside page. What would this mean to a man up the tree?

The Week

Official drawings for precedence in Vanderbilt race gives Germany right of way, Jenatzy being selected to start first; Chevrolet's big Fiat smashed on turn on course and Major Miller's car substituted; Campbell takes Baron de Cater's place.

Analysis of foreign trade by Frenchman shows Englishmen balk at buying second-hand French cars and that prices asked for big cars abroad are thought to be too high.

Cagno proves to be star of Mount Ventoux hill-climb, Italy scoring over her French rivals. Meet marks end of French season.

Percy Megargel has exciting times crossing Bitter creek and Red desert country on his way to coast.

Pittsburg dealers report business for year of almost $1,300,000; demand is for heavy cars.

James Gordon Bennett denies story he has given his cup to Italy for touring competition.

Braun scores his third consecutive victory in Semmering hill climb in Austria.

Cissac smashes motor cycle records in Paris, doing 90 kilometers in hour.

Manager Miles issues official diagrams and rules for Chicago automobile show.

A story from Oelwein, Ia., aptly tells the usual case of fright. The story is from G. H. Phillips and is as follows: "E. H. Burlingham, a prominent and enthusiastic motorist of this city, had a novel experience on the highway north of here during the latter part of this week. While driving his touring car to Decorah he met a horse and buggy containing an elderly lady and gentleman, who subsequently proved to be Mr. and Mrs. Philip Dowse. As Mr. Burlingham approached the rig he stopped and kindly offered to assist the old gentleman in his effort to pass the automobile, to which Mr. Dowse replied: 'If you will please lead my wife by, I think the old mare and I can make it all right.'"

Jenatzy starting first in the Vanderbilt alters the dope some.

When an agent shifts his account, does he have a patent conscience-shifting apparatus also?

Somehow or other Megargel has not come to the front with any hair-raising Injun stories on his transcontinental trip.

It is no wonder that James Gordon Bennett thinks it about time some organization that will guarantee to take care of it and defend it after winning the trophy should have his cup.

Some of the makers and drivers who competed in the American eliminating trial for the Vanderbilt cup race probably feel that they were handed a gold brick when they reached New York. But this is nothing; many a good man has picked up a gold brick in New York.

The decision of the Vanderbilt cup commission to throw out three of the qualifying cars stirred up a hornets' nest for a time, but it is a noticeable fact that the public and the contestants took their medicine gamely. But it must be remembered that silence is sometimes the forerunner of something doing.

Either the Pope people have not withdrawn their racing men or Johnny Fisher has been piping, for his thrilling tales of race car adventure told to the Capital, of Topeka, Kan., are numerous. So far as known his "driving down stretches at the terrific speed of 90 miles an hour," his "climbing outer fences," his making "junk out of more than $10,000 worth of automobiles," and his "turning over 90-horsepower cars" are creations either of his own or some reporter's smoke dreams.

Indications are that the speed fiend is being tamed or that his senses are being restored. The constable and the policeman seem to be resting on their oars, the lumps have been shaved, the snares are forgotten, the farmer is being reconciled and is buying automobiles, the legislative bodies have calmed down a little and the motorist—the sane motorist—is having peace. As MOTOR AGE said some time ago, all that was needed was for the public and the motorist to be reasonable and sane and the motor car would not prove the terrible thing it had been imagined. There is, however, a chance to improve things even now on the part of the enthusiast.

Digitized by Google

IN BATTLE WITH SAND

Megargel Fights Way Through Frightful Wastes of Western Deserts on Coast Trip

Rock Springs, Wyo., Oct. 4—The Reo Mountaineer still carries on its dash the motto Westward Ho. The mud of the center and the sands of the western deserts will soon be matters of history, in the first half of the double transcontinental tour, and the Pacific will be welcomed.

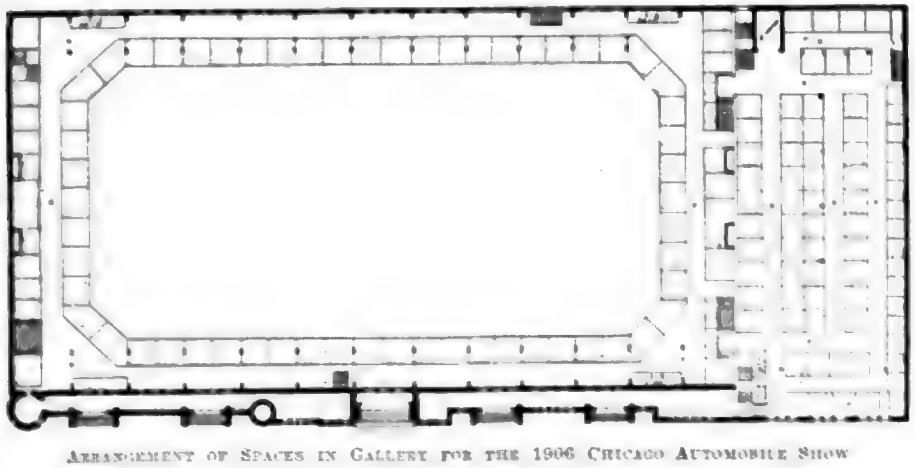
In the old days of transcontinental wagoning a man who successfully navigated the Bitter creek and Red desert sections of the Wyoming trail was considered tough enough for anything. Judging from our own experiences during the past week, the same may readily be applied to the man who operates an automobile over the same tracks. The country is sandy in the extreme and there are no towns from Rawlins to Rock Springs. The only places where a traveler can stop and get water or eatables are the little red section houses of the Union Pacific Railroad company, scattered about 10 miles apart over this entire stretch of waste lands—for the lands are certainly wasted in this section, being too poor for either cattle or sheep.

Tourists must carry what gasoline they deem necessary to cover this stretch of desert and should also provide their machines with sand tires, if they hope to negotiate successfully the many miles of deep white and red sand. Bitter creek receives its name from the fact that the water in this green and white becrusted stream is bitter—so bitter that men and cattle would rather die than attempt to drink it. Judging from the numerous bones, whitening in the sun's fierce rays, both man and beast have perished along this stretch in almost countless numbers.

We carried on the Reo Mountaineer, in addition to well-filled tanks of water and gasoline, 10 gallons of gasoline and 5 of water, strapped on the running boards for use in case of emergency. It was lucky we did, for the emergency came when we struck the sand. After putting on our sand tires, the Mountaineer ran on low speed with throttle wide open. I was told by fully a dozen well-pleased owners of automobiles that the Reo would take any sand it came to without sand tires, but I claim the machine is not made which will run over the white, shifting sands of the Wyoming desert without sand tires or some similar help. This sand is so light and shifting that 2 minutes after running over it the tracks are entirely lost.

Several parties who have followed my articles in MOTOR AGE have asked me: "What are sand tires?" Replying to this question I would say that the sand tires used by me on this trip are made from plans drawn by R. E. Olds and given by him to the foreman of the Reo upholstering department, who worked out the plans and shipped the tires on to me at Cheyenne. They are made of several layers of a very heavy canvas, leather bound on the surface, and they strap around the rims of the wheels, with a strap for every spoke. The ends are drawn up tight and laced together with rawhide. The tread of the tire itself presents a flat-leathered surface in the center, surrounded on either side by a circular piece of canvas stuffed with wool. The flat center is about 3 inches wide and the sides of wool stuffed canvas are each about 2 inches in width, giving a total width of 7 inches. Seven inches of treading surface is found quite different from the ordinary width of the Diamond tire, 3½ inches, and prevents the heavy wheels from sinking to any considerable depth, no matter how soft and drifting the sand may be.

Bitter creek must be crossed at least a half dozen times in following the trail from the station of that name to Rock Springs. The bitter, greenish water in the bottom of the creek, so thick with alkali that it is actually encrusted in white in some places all the way across the stream, presents the most treacherous kind of fording. Sometimes the bottom is fairly hard, but oftentimes the entire bottom of the creek seems to drop out from underneath the car and the wheels sink into that sticky alkali mud until just the tops are visible.—PERCY F. MEGARGEL.



ARRANGEMENT OF SPACES IN GALLERY FOR THE 1906 CHICAGO AUTOMOBILE SHOW

YEAR IN SMOKY CITY

Pittsburg Dealers Report Sales of Nearly $1,300,000 Worth of Cars This Season

Pittsburg, Pa., Oct. 2—The business of selling automobiles is practically at an end in Pittsburg for this season. It has been a record-breaker. Over 600 first class cars have been sold, besides an extensive trade in second-hand machines being done. The total amount of this business was nearly $1,300,000, according to the best estimates obtainable from the dealers. Even for Pittsburg, the city with more multi-millionaires than any other municipality of its size in the world, this is a wonderful record, the more so when it is remembered that the automobile is decidedly out of its natural element in this city, where steep hills, narrow, crooked streets and poor roads make the task of running a car one fraught with much labor and danger. But the Iron city has got the fever and next year the automobile dealers confidently expect to see a total of more than $2,000,000 in automobile sales.

In general the season has been extremely satisfactory. The demand for automobiles was foreshadowed to such an extent early in the year that two new automobile companies were organized—the Hiland Automobile Co. and the Liberty Automobile Co. Two more companies have recently entered the field—the Pittsburg Motor Vehicle Co. and the American Automobile Co. The two concerns first named are both preparing to greatly enlarge their facilities and the latter two will erect plants at once. The expansion in the trade of the older firms has been no less noticeable than the starting of new ones and the success they have attained. The Banker Bros. Co. has nearly completed an addition to its garage, which will give it the largest space in the city, and the Keystone Automobile Co. and the Standard Automobile Co. are both considering extensions which are badly needed to take care of the rapidly growing business. The most sanguine dealer 1 year ago would have hardly dared to predict such heavy sales this year, especially as the weather during 5 months of the season proper was so bad as to make automobiling off the paved streets next to impossible. But the business has come and with it an increase in the automobile spirit that bids fair to sweep aside all previous records next season.

Two points stand out clearly in the season's business. One is the rapid and steady growth in touring. Two years ago a man who took his vacation in a car was regarded as a daring person. During the last few months hundreds of Pittsburgers, with their wives and families, have gone east and west, north and south—hundreds of miles over mountains and far away from model repair shops—and have returned, invigorated and elated with the wonderful exuberance and independence that attend the va-

Digitized by Google

tion trip in an automobile. Not to hazard a trip of a few hundred miles now is almost to court being called cowardly. Touring is quite the thing among the Smoky city motorists and they will bend their energies this winter to getting better roads, more charming routes mapped out and a closer connection with automobile associations in other cities and states that these summer trips may become still more popular and satisfactory. The other pertinent point in the season's trade is the increasing demand for heavy cars. This follows naturally as a result of so much touring. Then, too, automobilists have found that it needs a heavy and powerful machine to carry a party of six or eight persons up a steep grade on an unpaved street or even up some of the boulevard hills.

The year has been conspicuous for the few events in comparison with the long list pulled off the preceding year. The Automobile Club of Pittsburg has turned its efforts to better roads and fairer legislation. Working along these lines, it has not only gained a firmer foothold with automobilists themselves than by fast racing, but it has won a place in the public confidence, particularly in the country districts, that it never had before. Its efforts to get good roads are not overlooked by farmers and they are letting up on their hysterical shrieks against automobiling. City authorities, although they still fight the automobilists, are beginning to see the necessity for enactments that will give the motorists at least a fair show. Hence the craze for racing is slowly dying out. "One mile of good roads for every meet we don't have" is the motto of a big proportion of Pittsburg club men who are beginning to feel keenly the benefits of the sport as enjoyed in a rational and healthful manner. Racing will have a more or less precarious existence in Pittsburg. Automobiling, on the contrary, has come to stay and its devotees are increasing in numbers and loyalty at a rate that gives every dealer in the city good reason to feel happy and hopeful.

PANHARD'S NEW FEATURES

New York, Oct. 2—William Du Cros, of the family which handles the Panhard in England, is here on a business trip in the interests of the French car. There will be five models of the Panhard marketed in America this coming year—an 8-11-horsepower, a 15-20, a 24, a 35 and a 50. In the 1906 models the axle will be placed further back than usual, which enables the French concern to fit a side entrance without unnecessarily lengthening the wheel base. The 15-horsepower model has a hydraulic governor and a gear-driven pump, as well as a new system of suspension back springs. The 24-horsepower is an entirely new model built exactly like the Panhard 50-horsepower. The magneto is gear-driven, as is the pump. There is a hydraulic governor, push pedals and the steering column passes through the dash.

CHICAGO SHOW FACTS

Manager Miles Issues Diagrams and Application Blanks for Exhibition in Windy City

New York, Oct. 3—Manager Miles has issued to the trade diagrams and application blanks for the 1906 show at Chicago. He announces that all equipment will be provided by the management, the cost being included in the rental. There will be no other charge. No equipment or decorations other than that so provided will be permitted. The right is reserved to decline to allot space facing on two aisles and to allot consecutive numbers only if that plan should appear fairer to a greater number of exhibitors than the old system.

The allotment will be made on Wednesday, November 1. All applications received up to noon of Saturday, October 28, 1905, will have equal consideration, subject to the conditions named. Later applications will be given consideration after the first allotment has taken place. The price of space, per square foot, is as follows: All corner spaces, from 1 to 82 inclusive, including spaces 6 and 7, $1.15; all other space in all parts of the building, $1. These prices include suitable floor covering, dividing rails, signs, hanging, wiring and current, if electric signs are decided upon, furniture and all necessary decoration and preparation. The management will so prepare spaces that no attention on the part of the exhibitor to any of the usual details will be necessary. There will be nothing for the exhibitor to do except place his cars or other goods in position. No other decoration, electric lighting, furniture or other material likely to destroy the uniformity of the exhibition will be permitted to be used.

The gallery will be devoted to the exhibits of members of the Motor & Accessories Manufacturers and manufacturing members of the National Association of Automobile Manufacturers, and will be alloted by a committee of the former, members of each organization receiving equal consideration. The space on the second floor of the annex will be devoted to exhibits of other makers of and dealers in parts and accessories.

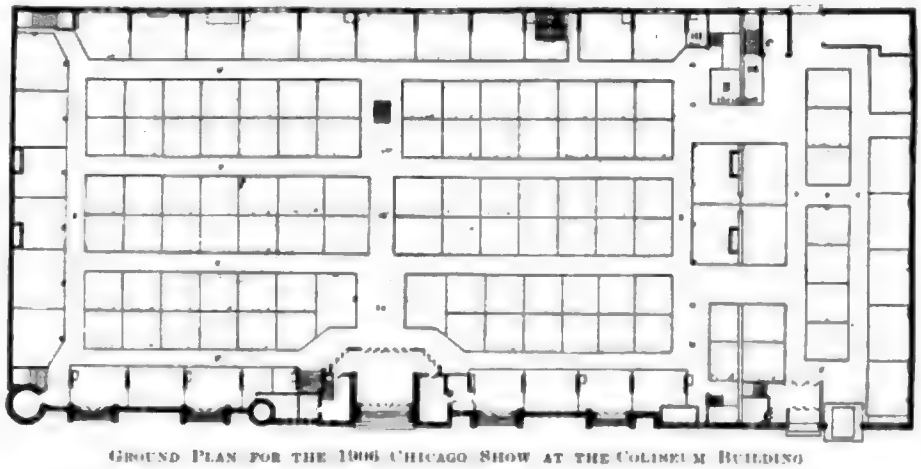
The show will be opened to the public Saturday, February 3, at 1 p. m. and each and every day thereafter, Sunday excepted, at 10 a. m., and will close each evening at 10:30 p. m. To the morning sessions, from 10 to 12, any automobile dealer or manufacturer will be admitted without charge by furnishing proof of his connection with the trade to the clerk of the bureau of information.

All of the spaces on the ground floor, in the restaurant and basement of Madison Square garden, have been allotted for the show of 1906. The spaces on the elevated platforms belongs to the parts and accessory makers and they with the importers will make their own allotment.

By a judicious selection of exhibits extreme congestion will be avoided. There will be not only room enough in the aisles for the comfort of the visitors, but room enough in the spaces, also, for their entertainment in a manner creditable to the industry. The decorative work will be on a scale of magnificence hitherto unkown in this country. Decorations for all the exhibitors will be in charge of the show committee and will be done by one decorator in one scheme. The color, lighting, sign and decorative scheme will extend throughout the building. Exhibitors in the gallery and on the main floor will be treated alike with respect to decorations and electric signs. There will be no individual plans allowed to mar the beauty of the general decorating scheme.

For the first time the show will be divided into departments. On the main floor will be pleasure vehicles, of gasoline and steam motive power. Electric vehicles will be in the Exhibition hall, otherwise used as a cafe. Commercial vehicles will be in the basement. For tires, parts and accessories the concert hall and platforms above the main floor will be used.

Motor car builders in the west as well as in the east are already talking the Chicago show proposition. The Windy City stands pre-eminent as a sale producing show. The individual manufacturers at the last show recorded unprecedented sales, and the 1906 show promises to be a leader.



GROUND PLAN FOR THE 1906 CHICAGO SHOW AT THE COLISEUM BUILDING

Digitized by Google

The Realm of the Commercial Car

An Ohio Inter-City Motor Bus Line

SPRINGFIELD, O., and three of its nearby towns are the scene of an inter-city motor bus line, the operation of which was started some 8 weeks ago and which is proving a good venture, as well as providing an excellent field for experimenting with the possibilites of the gasoline motor bus as a substitute for rural trolley lines, narrow gauge steam lines, or bus or stage coach routes. The scene of the experiment is to the south of Springfield, a city of 38,000 population, located in the center of Clark county, in the lower part of the state. South of the city, 8 miles, is Clifton, a typical 500-population town; 8 miles southeast of Clifton is Cedarville, with its 1,500 people, and 6 miles to the southeast of Cedarville is Jamestown, boasting its 2,500 residents. The three burgs lie south of Springfield as three lengths of a snake fence, the total distance between the termini being 22 miles.

The Commercial Transit Co. boasts a modest incorporation of $50,000, of which $20,000 has been paid in for preferred stock. John S. Harshman, of Springfield, the president, who for a long time has been closely identified with the leading traction line schemes in Springfield, is the promoter of the experiment and the turning of his attention from electric transportation to gasoline is not one of the smallest features of the enterprise. The circumstances, relative to the starting of this motor bus line, are interesting in that the line follows in the wake of numerous efforts to trolleyize the country roads joining these places, all of which exploded in mid-air owing to the sparsity of the rural population and the small population, as well, of the three places linked together by the system. The promoters of trolley lines figured that the number of people that could be looked upon as possible patrons of an electric line would not hand over to the company in fares enough to lay the rails, construct the roadway and operate a single car system over the line. This scheme would at best give poor service between the places—a service, in fact, not conducive either to inducing travel either among the ruralites along the line or with the burgers in the towns and villages passed through along the route.

Not one of the least important arguments in favor of the establishment of a motor bus line was the excellent condition of the roads. Few hills are encountered on the route. Along the road are many farmers, most of whom will not be slow to grasp the advantages of the motor bus. Bad country roads are the bugbear of the motor bus, as well as the passenger automobile, and Mr. Harshman, in deciding to take the bull by the horns, made a novel proposition with the commissioners of the counties of Clark and Greene, through which the route passes. He offered to aid in keeping the roads over the route in repair by spending at once $1,000 in improving the roadway, by filling in all holes along the route with stone, leveling all parts and putting the service in excellent shape by rolling. This offer was voluntary on the part of the president of the company and showed the determination to succeed which marked the initial efforts of the company. The president went further and arranged with the commissioners to share part of the repair bill for future years by agreeing to spend $100 a year in repair work on every mile of the road, the commissioners to spend a like sum.

The company began operations by purchasing from the Olds Motor Works three buses, with a carrying capacity of fourteen passengers each. The machines are of typical Olds construction, with 18-hors power motors placed vertically in fro Passengers sit on two side seats for passengers each and the cross seat for t driver accommodates two more passenge The body is bus shaped, with canopy t projecting over the driver, and drop s curtains so that in stormy weather passengers can be protected from weather. The company has added a luxuries of its own in the way of Apple dynamo for furnishing current small electric lights and for a headli The exhaust pipes are arranged to beneath the side seats, where heat spaces will be furnished, and the inte of the buses will maintain an even t perature.

Two cars are now running daily, third being retained for emergencies. schedule between Springfield and Ja town, 22 miles, calls for two round every other day from each machine two and a half round trips from eac the intervening days. The cars leav termini daily at 6 a. m., 9 a. m., 12 m 2, 4 and 7 p. m., one car making round trips or 88 miles every other the other making 110 miles or two a half round trips, or the machines to 220 miles every day. The single t made at a speed of 13 miles per h hour 45 minutes being needed for t miles. At each end of the route minute rest is given each machine. the schedule has been strictly adher but it is uncertain to predict what t winter months may do with the

The fares charged are base 2½-cent per mile rating, with of 50 cents between Springfie Jamestown, 22 miles. From running the cost of operation fairly well calculated. In a rou of 44 miles 4½ to 5 gallons o line are consumed and 2½ p lubricating oil. The former co cents per gallon and the la cents per gallon, making the for each round trip 57 cent operator is paid 25 cents an h as 2 hours are required for th trip an extra $1 must be add ing the actual operating expe

COMMERCIAL TRANSIT CO.'S MOTOR BUS

Digitized by Google

a round trip for each machine, $1.67. Four and a half such trips are made each day, so that the daily expense is $7.51 and the yearly cost amounts to $2,253.00. The company is allowing 2 cents per car mile for repair and depreciation. The two machines make together 220 miles each day or 66,000 miles per year, 300 days, so that the yearly repair allowance amounts to $1,320, which, taken with the annual fuel bill, gives a grand total of $3,573.

The three machines cost $6,600, an extra sum of $1,000 was spent in fixing up a garage and repair shop, and $1,000 was spent on highway repair. On this investment 5 per cent interest must be placed, which adds $430 to the total of $3,573 already reached, making in all $4,003 expenses for the first year.

Where are the receipts to cover this expenditure to come from and what will the company have as a revenue at the end of the year? Supposing that only one passenger was carried throughout the entire year, the receipts therefrom, at 2½ cents per mile, would be 2½ cents taken 66,000 times gives $1,650. Two passengers carried all of the time would give an annual revenue of $3,300 and four passengers would yield yearly receipts of $6,600. Take from this sum the operating expenses, $4,003 and there remains $1,597 as a dividend on the $20,000 paid up stock. A 5 per cent dividend on the $20,000 stock would only amount to $1,000, so there remains a margin of $597 for some things that are sure to lighten the coffers of the concern.

The company is anticipating running a similar line north of Springfield through Catawba, Mechanicsburg and Marysville, a total distance of 35 miles. A railroad links these points at present, but the service is so poor it offers slight advantage to the people in the towns passed and none to the farmers along the line. The company further shows its faith in the gasoline motor bus by ordering two 18-horsepower machines for use in and around Springfield. In the immediate vicinity of the city are such attractions as the Odd Fellows' home, Masonic home and Pythias home, all of which will lend aid to such transportation. It is the intention also of the company to rent the machines to picnicking parties at $5 per hour.

STOP NEAR CEDARVILLE, O.

A glance at the map, next page, shows the wisdom of running the line through Clifton, Cedarsville and Jamestown. The places are not linked together by a railroad and the trip to Springfield from any of the places means a roundabout run. The motor bus places the Jamestown people within 1 hour 45 minutes of the place. To the farmers the road is a boon. The buses stop at their gates and after taking them to market return them to their gates again.

A MOTOR AMBULANCE

John McCarthy & Sons, of Syracuse, N. Y., have put into commission one of the first automobile ambulances in that section. The White Angel, as it is called, attracts much attention. There are many new features in this ambulance. Mr. McCarthy introduced the first horse ambulance in Syracuse 16 years ago and has given free ambulance service ever since. He still keeps the horse ambulance for emergency. The new venture of Undertaker McCarthy was manufactured by the Brennan Motor Co. The body was made by Lansdale & Enright, carriage builders, who followed the plans laid out by Mr. McCarthy. The Brennan company made the chasis and engine, which is 16 horsepower. The car weighs 2,750 pounds.

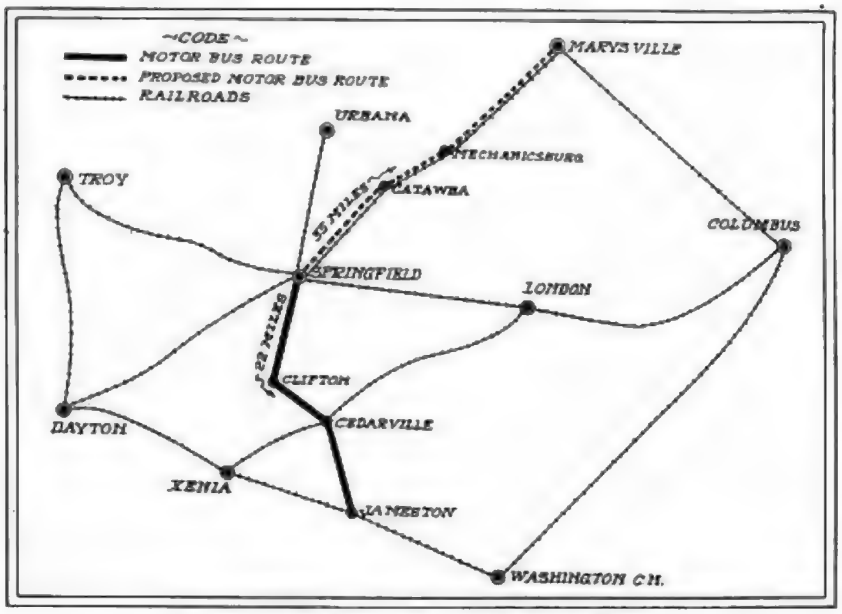
The car has a sprag which can be dropped by the operator in case the machinery should fail to work on a hill. An immense gong is operated by the driver. A mica wind and rain shield is fitted into canvas, which when not in use is buttoned to the top. The car is equipped with 30 by 3½ inch Diamond pneumatic tires and anti-skids on the rear tires, and has a three-speed sliding gear with chain drive. The car is finished in pure white and lined throughout, including the ceiling, with red leather. On the right is a leather couch, upon which a patient reclines, and at its head is a leather seat for the doctor. Over the couch are brackets, similar to those seen in railway cars, upon which hats, coats and other articles may be placed. A lamp is placed between the two brackets and under the doctor's seat is a locker. There is a 14-inch walk between the couch and the left wall of the body, covered with matting.

The vibration is reduced to practically nothing by the fact that there are two floors, the upper floor, upon which rests the couch, being so arranged that it can easily be pulled out. The lower floor has doors, so that the machinery can be easily reached. Between the two floors a folding casket is placed. Should the patient die the casket is drawn out and the corpse placed therein. Between the floors there is also a canvas stretcher, which can be taken out quickly.

The speed of the ambulance is 25 miles

FRIENDLY TANK WAGON STOPS TO GIVE MOTOR CAR A SUPPLY OF FUEL

Digitized by Google



ROUTE OF THE OHIO INTER-CITY MOTOR BUS LINE

an hour. One night during the state fair the ambulance went from Mr. McCarthy's house to the fair grounds, a distance of 5 miles, in 15 minutes and in 20 minutes the injured man was in the hospital. The ambulance was put in service at the New York state fair grounds for 6 days, having been engaged by the fair commission. It responded to telephone calls all over the grounds, taking the sick and injured to the emergency hospital. The Monday following it was engaged to be on hand at the automobile races at the state fair track. The first call of the ambulance was to take an officer of the national guard to the railway station. The ambulance transported the treasurer of the fair and about $15,000 nightly from the fair grounds to the city. In the daytime the car is kept in Mr. McCarthy's barn. At night it is kept in front of the store ready for emergency calls.

EUROPEAN AMBULANCE FIELD

Europe, as with all other phases of the commercial use of automobiles, leads America in the ambulance field. Switzerland, with more than usual aggression, has a complete motor ambulance service in two or three cities, and on one or two of the popular mountain roads, small ambulances, driven by gasoline motors, are used. In Germany, it is all the army, and here we find motor ambulance corps a standard part of the brigade organization. The German types are propelled by the gasoline motor and also by the electric battery. The former is in the ascendancy. All of the machines have a running speed of 25 to 30 miles per hour and are fitted with large size pneumatic tires, but solid tires are suggested for active service. The chassis construction is similar to that in standard touring cars.

In France progress is slower; the army has been attending more to motor transport of ammunition and supplies rather than to such method of carrying the wounded. In Paris, however, over a dozen ambulances are in service, most of them being owned by the large hospitals and placed gratis for the use of patients. England, especially in old London, uses them in considerable numbers and in her African, Australian and American possessions the pneumatic tired gasoline machine is doing good missionary work.

MOTOR BUS ON DEFENSE

The development of the motor bus in England has led to a controversy between its advocates and those of the electric tramway as to comparative cheapness of operation, maintenance, and utility of the two systems. The cost of propulsion for each ton weight of electric car was recently placed by a dealer at 24 cents; that of the gasoline motor bus at 80 cents. This is claimed to be an unfair comparison, because the motor bus weighs only about one-third per seat of the tramcar weight. The motor buses so far in use in England carry from twelve to thirty-six passengers, though forty-two-seated ones are now being built. It is claimed that the operating cost per mile is but little more for the larger than for the smaller sizes. The double-decked tramcar seats from fifty to seventy passengers. It does not seem to be disputed that the cost of rubber tires for motor buses averages more than the cost of maintenance of car tracks, allowing for original capital expenditure. It is contended, however, that improvements, organization, and increased knowledge are reducing the operating expenses of the motor bus. These, according to the latest official statement made for the motor bus, are 16.10 cents per mile, including maintenance and all working costs; similar expenses of municipal tramways according to such statistics as are available range from 14 cents to 14.56 cents per car mile on an average.

The special claim made for the motor bus is its availability in certain localities and conditions where the tramway would be impossible or unprofitable. Therefore in urging its merits, it is presented less as a direct competitor of the tramway than as an auxiliary to or a substitute for it. One particular field for the motor bus lies in towns on routes where a sufficient number of electric cars could not be run to make a return on the capital outlay for tracks and equipments. In congested city districts like London about the Bank of England, where cars and car tracks would presumably be a serious obstruction, the motor bus expects a clear field. For limited rural service the motor bus is claimed to be particularly serviceable and economical and this is especially applied to instances where railways are now using motors to link their systems with attractive country and seaside places which have hitherto been practically inaccessible owing to cost of steam service

A SYRACUSE UNDERTAKER'S MOTOR AMBULANCE

Digitized by Google

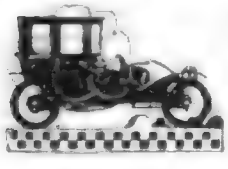
COMMERCIAL STEPPING STONES

Spain Wakes Up—Word comes from Spain that the municipality of Madrid contemplates the purchase of a number of automobile sprinkling carts for street use. American manufacturers have been invited to submit propositions.

Lansing in Line—Up-to-the-minute accommodations are being afforded travelers upon their arrival at Lansing, Mich. Plying between the depot and the hotels are two automobile buses. One is operated by J. A. Carr & Co. This machine is of the Olds manufacture and has a seating capacity of twelve persons. W. H. Porter is also operating an automobile bus in connection with a transfer line. His car is a Reo and also has a seating capacity of twelve persons. The cost to the patrons of the bus line will not be increased.

Russians Using Cars—Recent advices from Odessa, Russia, set forth the information that motor cars are coming largely into use for communication between country houses and the nearest town or railway, and also for inspection of estates. At present motor cars are supplied to Odessa by France, the United States and Germany. For touring purposes 12-horsepower cars are in demand, while for estate inspection, etc., cars of 8 horsepower have the call. Anyone who wishes to try his luck in south Russia should remember that the roads are bad and repair shops may be far away, so that strength and simplicity are more than ever desirable. Water is often difficult to obtain, so that steam cars should have water space sufficient for long runs without need of replenishment.

Oldsmobile in R. F. D.—A. H. Helgesen, R. F. D. carrier No. 5, out of Montevideo, Minn., in a recent conversation with a MOTOR AGE representative, spoke in the following terms on the work he is doing with an Oldsmobile runabout in covering his route: "My route is 24 miles. In making the trip I require 2 to 2½ hours and never over 1 gallon of gasoline on good roads. Then the machine does the work of a team of horses, but in very bad weather and on poor roads I do not use it at all. The expense is greater than a team when I run it all the time. Here are a few of the expense items I have had to face: General repairs, $30; new carbureter, $12; new chain, $8.40; special improvements of my own, $10; new tires, $62. The advantage in using the automobile is in the time saved and in drawing trade in other lines that could not otherwise be secured. All through I am pleased with the machine, but would think it an advantage in having a 12 or 16-horsepower machine so it would plow through sand, mud, snow and all." This machine has been in use for 16 months. The daily start on the delivery trip is at 2 in the afternoon with sixty-four mail boxes to be visited. The trip is finished in 2 hours, but when horses are used the start is made at 1 o'clock and the finish made after 5. The car often covers 120 miles a day, in addition to the regular mail route, when other work is being done.



New Quaker Line—Philadelphia is reveling in automobile bus lines these days. Besides the numerous rubber-neck wagons, to which the many conventions held in the Quaker City recently have brought a land office business, the Atlantic City line, which runs tri-weekly, is becoming a fad, while a line which does Fairmount park four times a day has more patrons than it can attend to. Last week another daily line was inaugurated, the objective point being Valley Forge, the start being made at 1:30 o'clock in the afternoon and the return trip being completed about nightfall. It is rumored that by next spring a line of fifty electric buses will be in operation on Broad and Diamond streets, at regular street car fares.

Clevelanders Fight Over Car—The municipal automobile which was purchased a few weeks ago for the benefit of the city fathers of Cleveland, Ohio, is causing a lot of trouble. The city council authorized the purchase of the machine, a 40-horsepower Stearns and the hiring of a chauffeur, without any very clear restrictions as to who should use it. The result is that about every one of prominence in the city hall has had a ride and since then they have all wanted more rides. The poor machine has had no rest and the operator has threatened to quit his job unless some sort of a plan is worked out for regulating the matter. The prospects are that the council will be asked to authorize the purchase of several machines in the very near future, as there is no other way to settle the controversy.

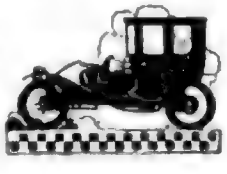
To Build Gyroscope Wheel—The Couple Gear Freight Wheel Co., of Grand Rapids, Mich., has let the contract for the erection of a factory. The new structure will be of brick and will cost $10,000. The machinery, which will be installed, will cost in the neighborhood of $70,000. The company was recently organized in Grand Rapids to manufacture the gyroscope wheel for electric trucks and is an offspring of the Holson Motor Patents Co. The plant is expected to be in operation by January 1, 1906. The company will manufacture, besides the wheels, the complete chassis, embodying everything in the truck but the body, batteries and tires. But one size of wheel will be produced at the new plant. Other sizes will be manufactured at other plants, which will be built by the company as the demands of the business make them necessary. The wheels to be manufactured by the company each contain an individual motor, fed by batteries underneath the truck.

Jewelers in Line—Bailey, Banks & Biddle, the famous jewelers of Philadelphia, have just added to their delivery service two Cadillac delivery wagons. The company proposes in the near future to almost entirely supplant its present horse delivery with motor wagons.

Southerners Try It—The R. Haury Co. has put in operation the first motor delivery wagon introduced in Nashville, Tenn. It is a 12-horsepower Cadillac and now the Merchants' Delivery Co., that operates some twenty wagons, is figuring on the installation of similar vehicles. This is sure proof that the commercial cars have made a hit there.

Beats Jim Crow Line—Among the recent enterprises in Nashville is the Union Transportation Co., capitalized at $25,000, which was granted a charter by the secretary of state to do a general transportation business. Immediately after the enforcement of the Jim Crow law colored people began to ride on the cars only when necessity demanded. Becoming tired of walking, the more wealthy colored citizens hit upon the idea of organizing the transportation company. Five big passenger automobiles have been ordered from New York and are expected in Nashville soon, when they will be put into service, one in each of the four sections of the city, north, east, west and south, while the fifth will be retained as an emergency machine. Work has begun on the erection of a new garage for the reception of the automobiles. The colored citizens of Chattanooga have started a similar movement.

Test Was Satisfactory—J. A. Cramer, of Buffalo, is showing the first of the Premier business wagons taken to Buffalo. Almost the first day the Premier was there Mr. Cramer sent it to Hamburg, 12 miles out into the country, with a load of 800 pounds of plumbers' supplies for a new building. Nine men rode in the car also. The time consumed on the trip was not recorded, but it must have been satisfactory, for next day the plumbers ordered one of the cars, specifying that the body be made extra large to accommodate even more of a load than the 1,800 pounds which the Premier people intended the car to carry. This is the first time Mr. Cramer has become much interested in a business automobile and he believes that the time is coming when Buffalo, because of its smooth asphalt paving, will be the leading city of the country for commercial motor cars.



Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

TIRES—Good tires give little trouble, watch them constantly. It is advisable never to start, after stopping without a look at the tires, for driving on a flat tire is apt to tear off the valve tube and pinch a number of holes through the tube. In some instances it will damage the outer cover irreparably and may damage the rim. If the tire is flat and a quick inspection does not show a nail or other cause, apply the pump and note the result. If it inflates properly a slight leak is probable. In this event test the valves; for about half the tire troubles, as shown by the New York-Boston reliability run, are found in the valves. This is done by immersing the stem in a glass of water, the valve being at the top of the wheel. If no leak is found here it must be elsewhere and the tire, if single tube, must be placed in a tub of water. If double tube, the tube must be removed, when the leak ordinarily can be heard or felt, but if very minute the tube may need testing in water. Repair instructions commonly accompany tires and therefore need not be included here.

TIMELY HINTS—A few remarks, however, gained from a long experience, will not be amiss. Always take the precaution to see that your valves pump easily and hold the air with reasonable certainty after the tire is inflated, for it is a decidedly unpleasant experience to be obliged to work hard and long in a hot sun after a tire has been repaired, because either the valve is not in good condition or will not hold air long enough to permit the cap to be applied. Valves, theoretically, should open at less than 10 pounds pressure, but in practice the resistance offered frequently necessitates several times this, thus unnecessarily doubling the already hard work of inflating a large tire. Pumps, too, should be given their share of attention to see that they work properly at high pressures, for it is far more important not to lose air after the pressure gets higher than at the beginning when the work is slight. The rubber tube and the passage through the connections, from the pump to the tire, should be kept clean and free, for much resistance is often found here, materially adding to the labor. The ordinary metal tube containing rubber solution permits of more or less evaporation, so the solution gets thicker than it should be.

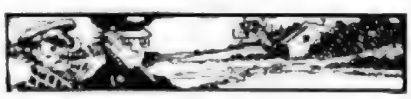
RUBBER SOLUTION—Most tire makers are over-conscientious about their solutions and furnish it already too thick for the best results under the hurried conditions usually found on the road. A thick solution does not set quickly and if the patch is applied while the solution is yet soft it does not hold firmly and may give trouble immediately after inflation and use, particularly if the road surface is hot, which tends to loosen the patch. A little gasoline will thin the solution, and there is not much danger of getting it too thin. A solution tube apparently half empty may be filled with gasoline, and after a day or two will be better than ever before.

PATCHING—It is particularly important that the surfaces of the rubber be clean. Sand paper is ordinarily and quite properly used to roughen them but its beneficial effect is rather that of cleansing than roughening. A clean, smooth surface will hold better than a rough one. Hard rubbing with gasoline on a bit of rag will generally remove all dirt, powder and "bloom" and leave the surface in perfect condition to receive the solution. Above all, water must be kept away from the surfaces, for it will neither permit the solution to adhere nor will drops of water dry rapidly if they are once smeared with solution, which excludes the air. In case of a torn valve stem, the surface can be smoothed by rubbing with a hot poker, taking care not to burn through the tube. It is usually possible to secure a smooth surface for the new valve in this way much more readily than by cutting with the average knife. One caution is to take ample time in making a repair, particularly allowing the rubber solution to get thoroughly set before applying the patch, and if time can be given it before using, all the better. Heat tends to soften fresh solution and loosen it, so avoid the hot sunlight or hot roads with a fresh patch as much as possible. If the tube cannot be repaired, wrapping the rim with rope will permit the vehicle to be driven, at a slow speed, of course. With rims having no sharp edges like the Dunlop and a little care in driving no harm results from running with the ca inside the shoe, the tube being remove The tire being larger than the rim is likel to jump off, but several miles can sometime be covered in this manner slowly but su cessfully and without apparent damage t either the rim or the tire. If the sho is left in place in the rim, the edges tend t bind on the rim while the outer portion crowded forward, thus wrinkling the shoe : several places and breaking both rubber a fabric. A shoe can be destroyed in this w in a very few rods.

OIL ON RUBBER—Rims should be ke painted on the inside, for rust not only h a damaging effect, but, being rough, it ten to chafe the rubber in contact with it a prevents a water-tight bearing of the t against the rim, thus further aggravati the rust by admitting water, which also w the tire fabric and soon rots it. Light r are absorbed by rubber which causes it swell and lose its strength as if rott Gasoline, on the other hand, although quic absorbed, quickly evaporates, leaving rubber uninjured, while heavy cylinder are usually so thick and heavy as to be sorbed but slowly and on this account not likely to do much damage. It is advisable, however, to leave oil on the ti

JACKS—In removing a tire or a wheel the vehicle is heavy, a jack is necessary. light, the tire may be applied at the and then the wheel rolled so as to br the portion of the tire that is on the underneath, after which the remainder the tire can be applied. Some people c a jack with them but if not at hand can commonly be made by using a bo a stick of wood of proper length, or a s of wood rather too long and a rail. Put rail under the axle, the stick of wood u the rail with its top leaning toward vehicle, then push the vehicle on the which tends to straighten the stick, lifting the rail and the wheel clear from ground. Usually something available hold up the wheel will be found in the mediate neighborhood when needed. S vehicles are constructed with their wh readily removable, which is a decided venience in cold or stormy weather, permits the repair to be made under sh instead of at the vehicle. In this event must be exercised to see that the jack ing the axle is secure, for dropping one of the axle will not only twist the ve badly but may damage some of the pa

CLEANING THE HANDS—In repairing the patching solution frequently get



EDITOR'S NOTE—This is the eleventh of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

over one's fingers. This, if combined with soap, becomes insoluble in water and is a very nasty grease to remove. It is best to not use soap but either wash the hands free from dust in clean water and then rub the solution off or rub it off before using water at all. When the solution is dry it rolls up easily, so that the hands are readily cleansed of it by a little rubbing.

LARGE TIRES BEST—When choice of tires is possible the buyer should take the benefit of the doubt. A small tire, although cheaper to buy in the first place, does not give as good satisfaction, for the money invested, as a large one. It is readily seen that a small boot heel will wear out quicker than a large one, and tires behave likewise. A tire of large section on a wheel of large diameter presents a large surface to the road and is but little damaged by usage, whereas if but a small section is presented, the weight causes the rough road surface to tear away and destroy the rubber, quickly ruining the tire. Large tires on large wheels, therefore, are not only a matter of comfort, but of economy. This fact is particularly true of the driving wheels, which are subjected to greater strains than the steering wheels, and should therefore be provided with larger tires. The use of large rear wheels is to be favored, for these must carry the major portion of the load and it is poor economy to use small tires on them simply to have all four tires alike.

AVOID MUD—Since heat softens rubber and water makes it cut easily, tires give best service in cold and dry weather. On a rainy day the tires are not only wet but the road surface may be so soft as to expose sharp points imbedded in the solid earth beneath, which points readily do damage to the rubber and it is a matter of common experience that tire troubles more usually occur in bad weather. Care should be exercised in driving to avoid mud and hot sun as much as convenient.

WINTER USE EASY—While admitting the above, many people think that winter use is exceptionally hard on tires, whereas the reverse is really true. The carpet tacks and bits of glass so frequent in the summer are often buried under a layer of clean snow in the winter. The sprinkling cart fiend is absent and the gutters are frozen solid, thus presenting not only safe surfaces but fairly level ones for winter use; while there is no heat to soften patching solution and give trouble on this account. A careful record of mileage will show most tire troubles during hot and wet weather and least during cold weather. If the vehicle is not used during the winter it should be lifted on jacks so as to remove the weight from the tires and the air pressure in the tires should be reduced considerably to avoid any unnecessary strain on the fabric. Care should be taken to see that they are not in proximity to heaters likely to damage the rubber. They should not be overdamp, for it rots the fabric, nor overdry, for it cracks the rubber. Tires should be well cleaned before wintering the machine.

DEVELOPMENT BRIEFS

Imports of August—According to the latest returns, ninety-two automobiles, valued at $331,782, and $30,393 worth of automobile parts were imported into the United States during August. During the 8 months ending August 198 cars, valued at $715,836 and $47,101 worth of parts, were imported.

Experimental Car Ready—The experimental automobile which has been for some months under construction at the plant of the Ellis Omnibus Co. at Cortland, N. Y., has been completed and will soon be tested out. The engine is the invention of Thomas Kennedy, a former employe at the Franklin works at Syracuse. Others interested are D. W. Van Hoesen, Dr. E. M. Santee, John Dowd, W. W. Bennett, E. E. Ellis and C. F. Weiler.

Foreign Idea of Elegance—Director General Wickuler's 40-horsepower Metallurgique car, the body of which was built by George Kruck & Co., of Frankfort-on-the-Main, Germany, was awarded first prize for elegance in the recent competition at Homburg. The Kruck tonneau is a kind of limousine, yet so artistically fitted up that all windows can be flapped upward and made fast beneath the roof. The back seat affords accommodation for three persons, that opposite, furnished with arms, for two. Neither driver nor mechanic has any just cause to complain on the score of comfortable sitting, as each seat may be described as a veritable easy chair. Leather upholstering has been employed for the interior, which is fitted up with a couple of cupboards, with wet goods, pharmaceutical case, with bottles and glasses, two movable arm-slings, folding tables, speaking tube for communicating with the driver, ash trays, visiting card pockets, a luggage net, etc., etc. On the ceiling is a powerful electric lamp. The travelers' boxes are stowed away behind on a brass support and fashioned to fit exactly into the back of the tonneau.

Two-Cycle for Olds—The Olds Motor Works of Lansing, Mich., is presenting to the 1906 trade a two-cycle, two-cylinder car. The cylinders are mounted vertically and will generate 20 horsepower. Special features in motor construction are an exceptionally small crank case, so that good pressure is had for forcing the mixture into the cylinders and peculiarly shaped inlet ports.

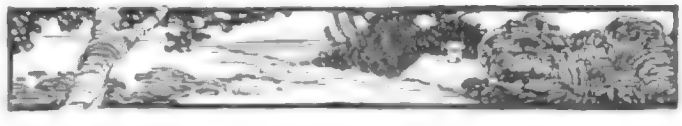
August Exports—The upward tendency of the American automobile export trade continues, the latest statistics showing that during August automobiles and parts to the value of $260,853 were shipped abroad, as against a value of $168,303 during the same month a year ago. During the 8 months ending August, 1905, these exports were valued at $2,041,134, as compared with a value of $1,322,499 during the same period of 1904 and $1,049,311 for the 8 months' period of 1903.

New Armored Cable—Herz & Co., of New York, have just brought out a new ignition cable. Several layers of rubber alternate with a secret compound and the whole is covered with an armor of steel, which protects the cable but does not interfere with flexibility. The outer steel armor is brought into conducting connection with the ground. This cable is sold cut to the length required and fitted with special terminals, ready to be hooked to the engine, either for primary or secondary.

Non-Fluid Oils—The New York and New Jersey Lubricant Co. calls attention to the impression that has been gained that its oils are of the nature of compression grease. The claim is made that the lubricants put out are in no sense of this character but are just what they are called, non-fluid oils, doing all that other oils will do and without the disadvantage of running or leaking.

Changes Hands—The Eureka Separator, a device for separating water from gasoline, is hereafter to be manufactured by the Winkley Co., of Detroit, Mich. The device was formerly manufactured by the Eureka Separator Co., of Rockford, Ill. The water, in passing through the separator, settles below a screen, while the gasoline passes through a screen, where an even flow of gasoline to the carbureter is assured. All other impurities, such as dirt, rust, etc., are taken from the gasoline in the process and the drain cock, at the lower end of the separator, enables the operator to draw off the water and dirt and clean the tubing.

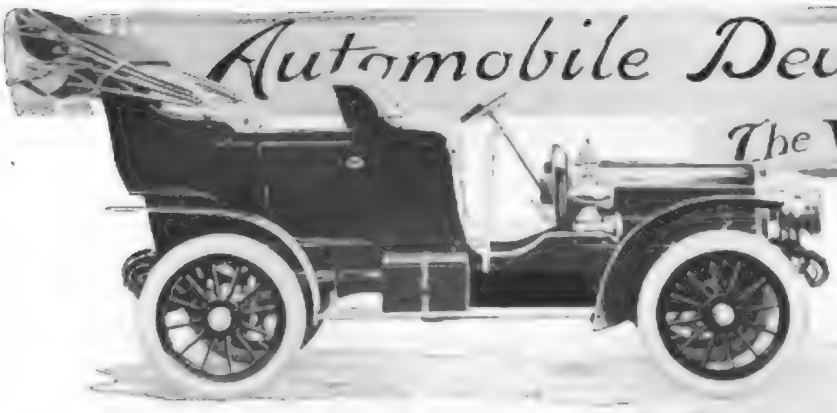
Maxwell-Briscoe Plans—With two additional factories—one at Providence, R. I., and the other in a western city not yet fully decided on—the Maxwell-Briscoe Motor Co., with the main plant at Tarrytown, N. Y., announces it will produce at least 3,500 cars in 1906. They will be practically the same as this year's models, the company claiming to have found no weaknesses or any feature that required any radical change. One of the tests recently given one of the small stock cars was a run from Boston to New York, a distance of 286 miles, in a little less than 11 hours on 12 gallons of gasoline, the average speed being 26 miles an hour.



Digitized by Google

Automobile Development

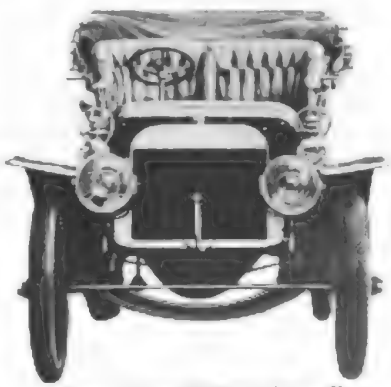
The Winton - Model K



THE offering of the Winton Motor Carriage Co., of Cleveland, O., to the automobile public for the coming season is a large touring car, to be known to the trade as model K. It follows Winton construction lines, as used this season, but differs in being fitted with jump spark ignition from storage battery, a Hill mechanical oiler, a new style of carbureter, new front and rear axle design and in the grinding of cylinder parts. Well known features retained are individual clutch transmission, air control of inlet valves, twin springs and vertical motor with cylinders cast in pairs.

The channel section side pieces of the frame are parallel throughout, being tapered toward the front and rear, where they terminate in long hook-shaped spring hangers. The motor and transmission are carried on drop cross pieces, dispensing with the use of a sub-frame. Four twin semi-elliptic springs are fitted, the rear pair swung beneath the frame pieces. All are shackled to the frame and spring hangers in the usual way. The front axle is new and made from I-section manganese bronze and drops from where the steering knuckles are carried to the center for crank case clearance. In the factory it is tested to a tensile strength of 90,000 pounds per square inch. On the axle are integral steps, on which rest the springs. The steering knuckles are of Lemoine type and Timken conical roller bearings carry the road wheels. The drive shafts in the rear axle extend from the hub caps to the spur gears in the differential and the shafts are so designed that when the hub caps are removed they can be withdrawn and the differential dissembled. This is accomplished by having the axle casing carry the total weight of the machine. Conical roller bearings are fitted throughout the axle and truss rods with turnbuckles for adjustment are connected with the ends of the axle casing and pass beneath the center of the differential casing. The top half of the axle casing, being removable, it is easy to inspect the differential gearing. The road wheels are 34-inch artillery pattern with 4-inch tires, and the wheel base is 8 feet 6 inches.

Four vertical cylinders, cast in pairs, and with a bore and stroke of 4⅝ and 5 inches, respectively, are used in the motor. The rating is not given in connection with the machine, but at 1,000 revolutions per minute between 35 and 40 horsepower should be generated. The heads, water jackets and valve ports form an integral casting. The crankcase is split vertically, in line with the crankshaft bearing, so that half of it can be removed without interfering with the mounting of the cylinders and the crankshaft and pistons removed. In this removable side are two large inspection plates, one to each pair of cylinders, which are quickly removable, accessibility being one of the leading claims for the motor. The valve ports are on the right side, the automatic inlets being located in the top of the ports and directly above the exhausts in the port bottom. The camshaft is enclosed within the crankcase, and between the gear which it carries and all other gears are intervening fiber gears. The crankshaft is a three-bearing, drop steel forging. One of the noticeable changes within the cylinders is the grinding of the cylinder walls, the surfaces of the pistons, the piston rings and the valves, in defense of which the company claims better compression and easier movement. The arched-top piston remains, and carries on its upper end three compression rings and on its lower parts has oil grooves. The connecting rods are not split at the wrist pin ends, but fasten to the crank pins by means of an angular split, as used in this year's machines. The exhaust valves have long stems which at their bottoms screw into short seats that carry rollers, against which the cams bear. The use of push rods is in this way eliminated. To remove the exhaust valves, the inlet valves are taken out and then the exhaust valve stems are unscrewed from the seats. The inlet valves are directly above the exhaust valves and on the top part of the stem carry a piston working in an air cylinder by means of which the opening of the valve is regulated. The air when admitted beneath the air piston hinders the opening of the valve and consequently the speed of the motor is reduced. To accelerate, a push button on the footboard cuts out the air from the air pump to the cylinder.



FRONT VIEW WINTON MODEL K

In the center of the cylinder heads are vertically mounted the spark plugs. Current comes from a 6-volt battery and a set of dry cells carried in a lock box on the running board. The commutator, on the dash, has a roller contact point working against hardened steel contacts. Near it is a four-vibrator spark coil and on the steering wheel is the spark control lever. For those desiring it a magneto for ignition is included in the regular equipment.

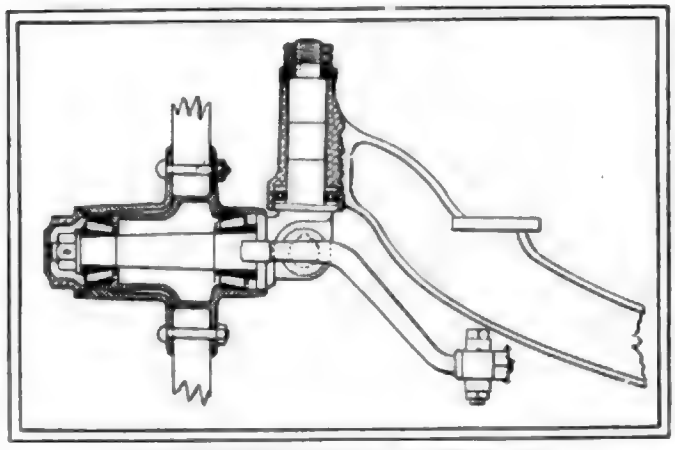
For motor lubrication an eight-feed Hill mechanical oiler is installed. It supplies all motor bearings. To the cylinder walls and bearings are separate leads, and the oil, after being used in the bearings, enters holes in the crankshaft and is conducted through it by centrifugal action to the crank pin bearings. The oil grooves in the piston are filled from the splash and distribute lubricant over the entire cylinder walls. On the dash are located the sight feeds, making it easy to watch the lubrication of the machine. In case the oil is congealed in the tubes or oil pipes a pressure of 100 pounds is brought to bear upon the liquid to force it into the bearings. When in the oiler air pressure is not used no other pressure is resorted to, but this pressure is used in forcing the oil from the large oil tank to the oiler.

Water circulation is effected by means of a centrifugal, gear-driven pump carried on the motor. The radiator has vertical tubes and behind it is a fan, as well as fan spokes in the flywheel. On the generator fan is a friction clutch, permitting it to start gradually when the motor starts quickly.

The carbureter, of Holley design, has a float concentric with the spraying nozzle. It is of the compensating type and

Digitized by Google

automatic in its working. Gasoline carried in a tank beneath the frame at the rear of the back axle is forced by air pressure to a small supply tank on the rear side of the dash, and from this tank the fuel flows direct to the carbureter. The pressure in the main gasoline tank is furnished by an air pump on the front end of the motor. The carbureter is not adjusted in controlling motor speed, it being first adjusted and then not resorted to, the spark and air-controlled inlet valves being the only motor regulators.



WINTON STEERING KNUCKLE AND FRONT AXLE

The individual clutch type of transmission comprises one of the unique features of Winton construction that has been retained. In the illustration the main shaft A is connected with the crankshaft through a universal joint Y adjacent to the flywheel so that when the motor is running the shaft is revolving. The propeller shaft B drives to the rear axle and C is the countershaft. The black, heavily-shaded parts, on the main and countershafts are gears which are always in mesh. It can be noted by the keys shown on the shafts which of the gears are rigid with the shafts and which run idle on them. Within three of the gears are cone clutches for locking loosely-mounted gears to the shafts. The transmission gives two forward speeds and one reverse. To obtain the direct drive the shaft A must be coupled with the shaft B. Rigid with A is the clutch D bearing within the gear E. The clutch is forced against E by the collar K being slid so that its ball forces the dog F against the disk G which in turn bears on the connection plug H, which pushes, through the gear O, against the clutch and forces it into the gear E, thereby causing the gear to revolve with the main shaft. But the part M of the gear is bolted to the casing, which unites through a universal joint with the shaft B and the drive to the back axle is accomplished. The cone N is used to assist cone D in driving to the gear E, so that danger of cone slipping is reduced by using two cones instead of one. For slow speed ahead the drive is from the main shaft through the gear O to gear P, which is made rigid with the shaft through the clutch R and then through gear Q to gear E and shaft B. For getting the reverse gear S drives to an idler Z and it drives into gear T secured through the clutch X to the shaft C, and gears Q and E complete the circuit to the shaft B. For operating the clutches two levers are needed: the inner one pushed ahead gives the reverse drive and slow speed ahead when drawn back and the other when drawn back gives direct drive and, when advanced beyond neutral, applies the emergency brake on the drive shaft. Small springs are used with each clutch for disengaging it when a drive is changed. The entire gears and clutches revolve in oil so that when applying a clutch there is an oil film between the male and female part which has to be expelled before there is a positive drive between the two, permitting of a gradual application.

The propeller shaft is universally jointed in front of the differential casing. In the braking system are three external friction band brakes, two working on cast iron hub drums on the rear wheels are applied by pedal and used for regular use, and one on the rear end of the transmission shaft and operated by a forward movement of the high-speed lever serves for emergencies only. The placing of the regular brakes on the rear hubs is to save the machinery from all strain in the frequent application of the regular brakes.

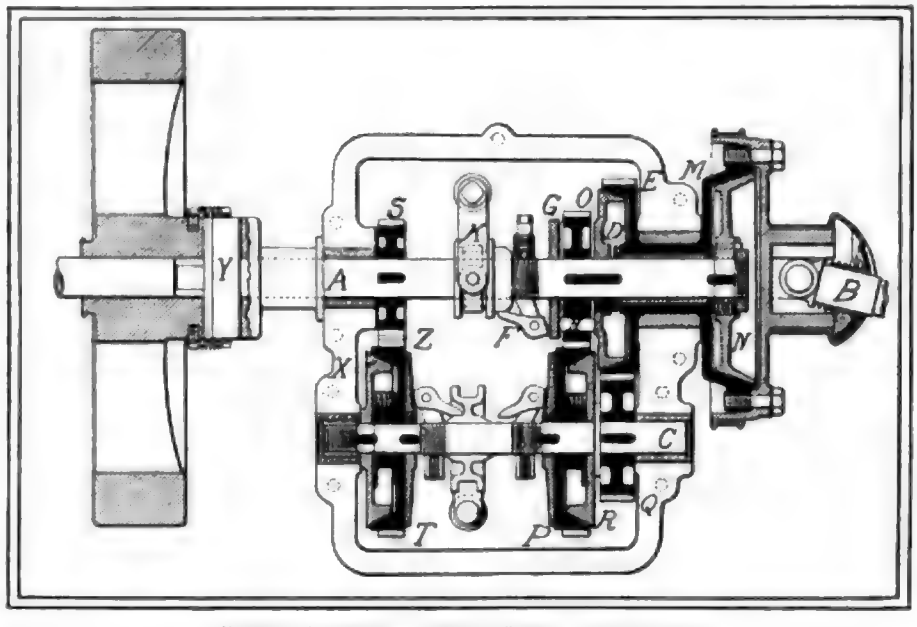
The muffler, an improvement over this season's, is a cylindrical chamber with a double sheet iron casing, the casing parts separated by an asbestos lining. Within the chamber is a number of circular disks, practically equal to the inner diameter of the casing. Alternate disks have openings near their peripheries and the intervening disks near their centers, so that the exhaust gases take a zig-zag course in passing through the muffler.

The control of model K is little different from this year's models. The levers at the right serve for giving speed changes and applying the emergency brake; in the footboard is a push button for regulating the opening of the inlet valves, and beside it is a regular brake pedal. The spark control lever is on a quadrant on top of the steering wheel.

The body design is similar to model B of this year, but the addition of a hollow metal dash and different side entrances as well as rear seat curves are noticeable. The backs of both seats slant considerably, but the upholstering is not heavily rolled above them. The running board and small fenders are adhered to. The finish is in green, maroon, red or blue, with different colors of running gear.

THE NEW POPE-TOLEDO

"Quiet-Mile-a-Minute Pope-Toledo" is the name of the new touring car to be put on the market by the Pope Motor Car Co. for the season of 1906, to be called the Morlee XII. As compared with the cars of previous seasons, the new car is described as having more power, more speed, more room, more style, more strength and less weight. In the motor design the company aimed to produce the greatest efficiency for the least weight in the construction of a gasoline engine. Without sacrificing strength, the engine to be installed in the 1906 car is a feature and the claim is made that a very remarkable result has been attained in securing 1 horsepower for every 10 8-10 pounds of motor weight. The motor is composed of four individual, twin-head cylinders, with copper jackets, and will develop



WINTON INDIVIDUAL CLUTCH SPEED CHANGE GEAR

Digitized by Google

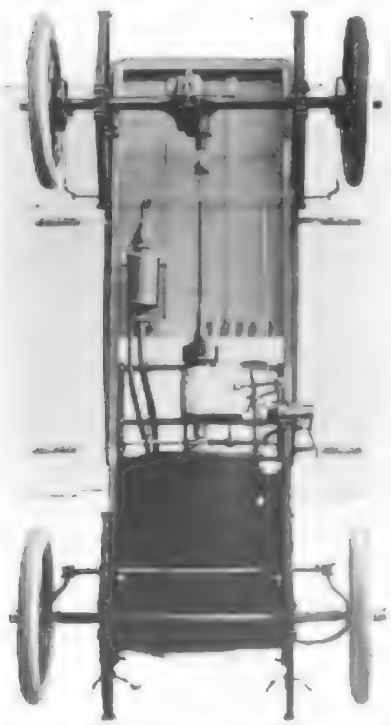
43 to 44 horsepower under brake test. The Pope-Toledo radiator is used and all gears are encased. The body design is entirely new. Having a double side entrance, the body is provided with a large, roomy tonneau. The front seat is divided.

The Pope-Toledo people have much to say about the steel used, all being forged at the Toledo plant, the axles being tested to 110,000 pounds tensile strength, while that used in the transmission is of 210,000 pounds tensile strength. There is direct drive on the high gear, with no idle gears in mesh. Side chain drive is retained. The tank holds 17 gallons of gasoline, designed to carry the car 270 miles. The wheel base on the new car is 104 inches, all four wheels being 34 by 4 inches in size. In the proportion of power to weight, the new Pope-Toledo car has 1 horsepower for every 54 pounds weight.

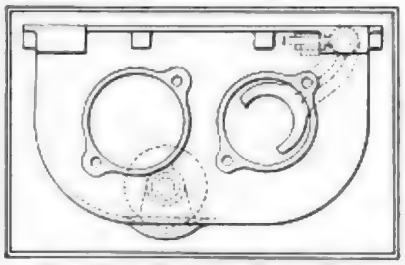
FOUR FRANKLIN 1906 CARS

Four models are offered for next year's trade by the H. H. Franklin Mfg. Co., of Syracuse, N. Y. These are known as models E, D, G and H—the first a light roadster slightly different from the light car of this season, the second very similar to the present large touring car, the third an entirely new model with four cylinders placed longitudinally, with multiple disk clutch, sliding gear transmission and shaft drive, and the last a six-cylinder machine with disk clutch and sliding gear transmission. The construction of the Franklin motor is different in many ways from the present style, but air cooling is adhered to, with all the valve cages provided with flanges. The leading innovation is the use of a sliding gear transmission and multiple disk clutch.

In model G, a description of which follows, ash sills form the side pieces of the



Bottom View Franklin Model G Chassis



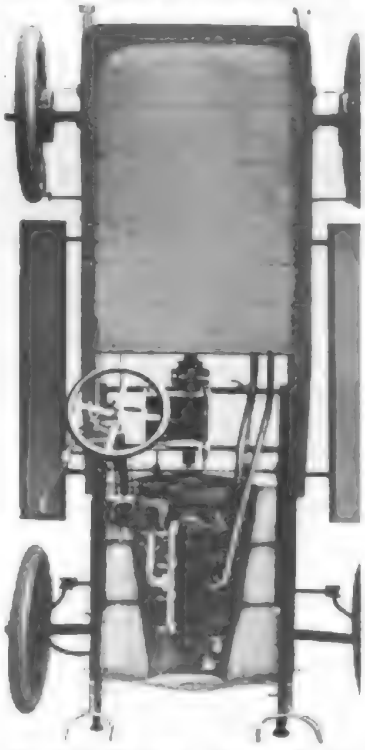
End View Franklin Crank Case

frame, which are suitably braced together. Four full elliptic springs, clipped beneath the axles, carry the frame. The front axle is made from nickel steel and is heavily dropped from steering knuckle to steering knuckle. The rear axle, of the divided type, carries the bevel gear differential in an oil-tight case in the center and the drive shafts revolve on roller bearings. Thirty-two inch wheels are used.

The 12-horsepower motor has four air-cooled cylinders mounted longitudinally beneath the bonnet. Each cylinder with 2¼-inch bore and 3¼-inch stroke is a separate casting, the walls, head and cooling flanges being made integral. In the head are two openings side by side, the forward one for the exhaust valve and the inlet valve opening just behind it. In the top of the cylinder wall, at the right side, is a spark plug opening, and near the bottom of the wall, on the opposite side, is an opening for the attachment of the casing carrying the auxiliary exhaust valve. The crank case, roughly speaking, is cylindrical in shape, with both ends, the top and one side left open. To the four top openings are bolted the cylinders, each by four bolts, in one side are two large inspection plates, for gaining access to the crank shaft and connecting rods, and on the ends are bolted the plates that carry the crank shaft and cam shaft bearings. From the side, the case has a corrugated appearance owing to it being slightly contracted between the cylinders for the carrying of a crankshaft bearing. The case is supported from the frame side pieces by horizontal cross angle pieces, one crossing between the first and second cylinders and the other between the third and fourth. These angles are bolted by two bolts each to the top part of the case and at their ends rest on angle pieces secured to the sides of the frame.

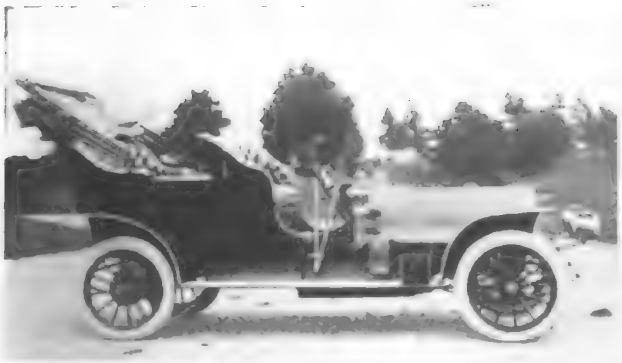
The crankshaft is a 1¼-inch steel forging with throws mounted at 180 degrees and revolves in five 1⅞-inch bearings, two at the ends and one between each two of the cylinders. The intermediate bearings are carried on pedestals, held in place by bolts passing through the base of the case. The pistons have flat tops, which with the level heads in the combustion chambers makes a perfectly cylindrical combustion chamber. Three compression rings are all above the wrist pin, which is of ¾-inch diameter and pinned to the piston journals. The connecting rods are made from I-section metal and bronzed and babbitted at both ends. The connecting rod cap has a horizontal split with the connecting rod and is bolted and cotter pinned in place. Crank pin bearings are 1¼ by 1⅜ inches.

The mechanical inlet and exhaust valves are made of nickel alloy. Each valve sits in a valve cage, cooled by vertical, longitudinal flanges and held to the cylinder by a pair of screws. The cages are snail-shaped, with the large end opening meeting the opening in the pipe from the carbureter, and in the case of the exhausts, the pipe to the muffler. The cooling of the cages is new with this model. The pipe from the carbureter is a short vertical one which unites with a horizontal pipe lying as close as possible alongside the top of the cylinders, the openings in this pipe facing the openings in the valve cages. The exhaust pipe connection with the exhaust valves is of identical construction, two bolts holding the horizontal pipe to each valve cage. All valves have a diameter of 1⅜ inches and a lift of 11-inch. The stems are ⅜-inch diameter. The valves are ground to 45 degrees. Each is operated through an over-head rocking arm, one end of which rests on the top of the valve stem and the other end carries a vertical screw with a cone-like cavity in the bottom and in which rests the upper rounded pointed end of the push rod. On the cam shaft are twelve cams, four for opening the inlet valves, four for the main exhausts at the cylinder heads and four for opening the auxiliary exhausts near the cylinder base. This year's machines use automatic valves here, but the new models use the mechanical. The 1 3-16-inch auxiliary exhaust valves are ¼ inch above the tops of the pistons when at the bottom of the stroke. The c

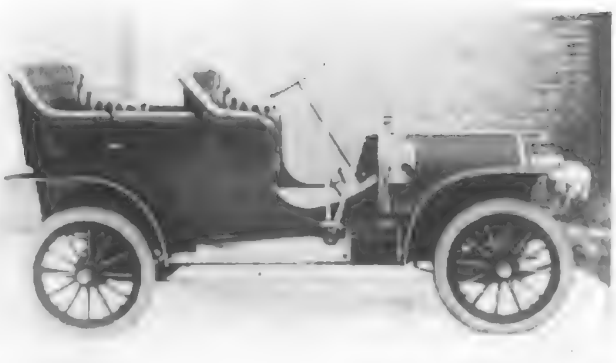


Top View Franklin Model G Ch

Digitized by Google



Model H Six-Cylinder Car



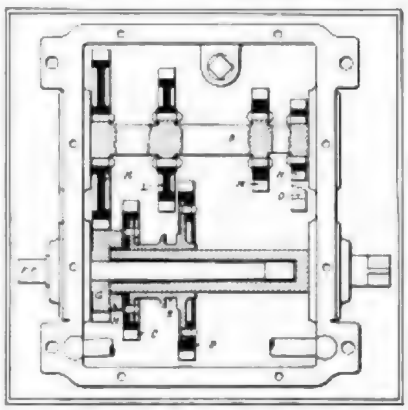
Model G Four-Cylinder Car

The 1908 Franklin Line

carrying the valves are bolted to the side of the cylinders and are cooled by circular flanges. The pipes for the auxiliary exhaust extend 7 or 8 inches from the cylinders before they unite in the pipe running to the muffler, the object being to keep the hot muffler pipe as distant as possible from the cylinders. The object of the auxiliary exhaust openings consists in that the hot explosion gases which are directed downwards by the explosion reach the openings in the bottom of the cylinders and are blown out without having to ascend to the top of the cylinder, heating the cylinder walls and then passing out through the main exhaust valves. On the camshaft all cams are keyed in place and the shaft revolves on babbitted bearings. On the front end of it is the commutator pressed on in place and dispensing with the use of driving gears. On the dash is carried a standard coil to which current is furnished by batteries. The spark control lever is on a quadrant on the steering wheel. On the top of the steering column is a flat spiral thread around which is a sleeve to which the quadrant lever is attached. As the lever is moved from side to side the spiral raises or lowers the sleeve, which is connected by rod and bell crank with the commutator casing.

The multiple disk clutch is placed within the flywheel and is sufficiently small in diameter to allow of the flywheel spokes outside of it acting as fan blades for drawing the hot gases from around the motor. Eighteen disks are used for giving friction surface. They are arranged in two sets of nine each, one set being secured at their outer edges by keys to the flywheel, and the other set, alternated with them, fastened at their centers to a sleeve on the transmission shaft. One set of disks is made from phosphor bronze and the other from crucible steel. As the clutch works in oil there is always a film of oil between the disks before they are pressed against one another in engagement when the oil is gradually expelled and the clutch takes hold gently. The engagement is effected by a clutch pedal and springs, the latter for contacting the disks. With the releasing of the springs there is nothing to hinder the disks separating. The disks are 6¾ inches in diameter and 1-16-inch thick.

The sliding gear transmission, a departure in Franklin construction, is carried in a compact aluminum casing bolted at the front and rear to two cross angle pieces of the frame. The main and counter shafts of the gearing are in the same horizontal plane with the former for direct drive, forming an axially connection between the clutch shaft and the cardan shaft to the rear axle. The counter shaft lies to the right of the main one. The entire gear case is open on top, eight screws being used in retaining the cover. The bearings, Hess Bright balls, support both shafts and are not carried between the gear case and the cover, but in cages bolted into openings in the ends of the case. The clutch shaft F has rigid with it the gear G, which carries dental face teeth H to mesh with similar teeth on the forward side of the gear C, which, being on the squared main shaft, which is coupled to the cardan shaft, gives direct drive. The pair of sliding gears C and D is slid by a yoke engaging with the collar E. The gears K, L, M and N are rigid with the counter shaft B revolving when it does and vice versa. Gear K is always in mesh with G, so that the counter shaft revolves on direct drive. For slow speed ahead the drive is through G, eighteen teeth, to K, thirty-three teeth, and from M, eighteen teeth, to D with thirty-three teeth, and to the rear axle, thus giving a heavy reduction. In the second speed ahead gears C and L are meshed, the latter has twenty-six teeth and the former twenty-five. For the reverse D meshes with O on a shaft in the bottom of the case, the reverse being due to O being constantly in mesh with a gear N of the same size on the counter shaft. It can be noticed from the illustration that in direct drive the pair of sliding gears is on the front of the main shaft; for second speed ahead they are moved back one space, for slow speed they are moved backward one space further and an additional space for the reverse. This obviates passing through gears when increasing or decreasing speed gradually, but should an operator wish to drop at once from direct drive to the reverse, two gears have to be passed through. The change of speeds is through a single lever at the right of the driver. Notches for each speed and the neutral position are on the quadrant within which the lever works. The gear shifting mechanism consists of a horizontal bar at the left of the case on which is a sleeve. To the center of it is pivoted one end of a short lever that in its middle is pivoted to the yoke engaging the collar on the sliding gears. The other end of the lever is pivoted to a lever extending across the top of the gear case over the main and counter shaft and the outer end of the lever is directly connected with the shaft carrying the speed change lever. The cardan shaft to the center of the rear axle is squared throughout its length and carries universal and sliding joints.



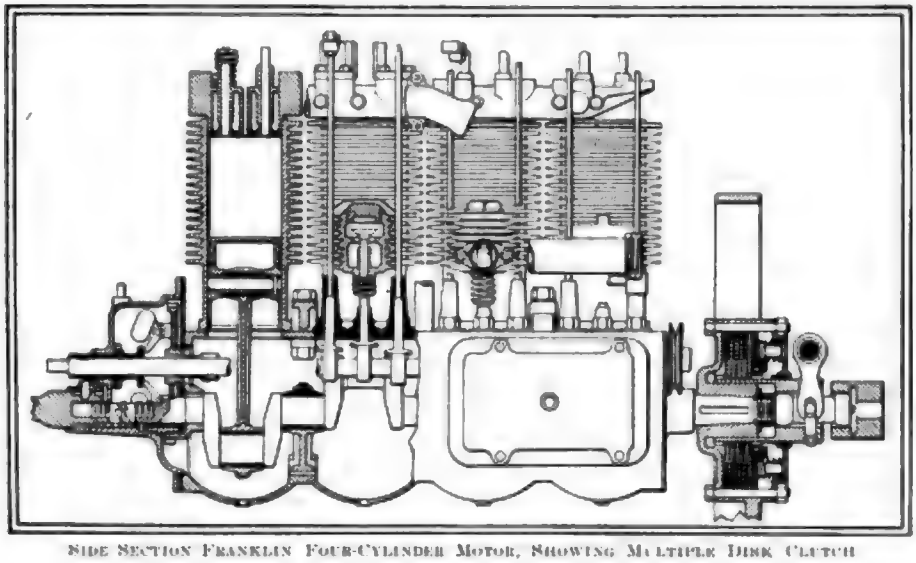
New Franklin Transmission

Three brakes are used, two of which are contraction bands on the rear hubs for emergency use. They are 8½ inches in diameter, 2¾ inches wide, and lever applied. The regularly operated brake is a friction band operating on a 6-inch drum on the propeller shaft just at the rear of the transmission gear case. It is applied by pedal.

The body is conspicuous by a cylindrical bonnet terminating in a screen front, and has straigh dash, angular side entrances and running side board. The front seats are divided by a low divider and the upholstering in front and rear seats is rolled heavily around the tops. The side entrance doors are hinged at the front side. The color, as with all of the machines, is optional, light running gear and green or red being leaders.

Of the remaining models D is a 20-horsepower car, of similar lines to the present large touring car. The motor is constructed

Digitized by Google



SIDE SECTION FRANKLIN FOUR-CYLINDER MOTOR, SHOWING MULTIPLE DISK CLUTCH

similarly to that in model G, only larger. In the transmission is used the multiple disk clutch and sliding gears. The wheel base is 100 inches, the weight 1,800 pounds, and 32 by 3½-inch tires are used. The body has the cylindrical radiator, triangularly shaped side doors, semi-divided front seats and running side board, with the front fenders with inside enclosed to prevent mud spattering on the bonnet. Model E is the 12-horsepower light roadster with the four cylinders mounted crosswise in front and single chain drive to the rear axle. The wheel base is 81½ inches, 7½ inches longer than heretofore, and the body is correspondingly larger. The change speed lever is placed inside the car and slightly forward. Model H is the new six-cylinder machine, with 30 horsepower generated at normal crank-shaft speed. The cylinders have a 4-inch bore and stroke. The construction throughout follows the lines of model G, the motor, clutch, transmission and final drive being the same but of heavier build throughout.

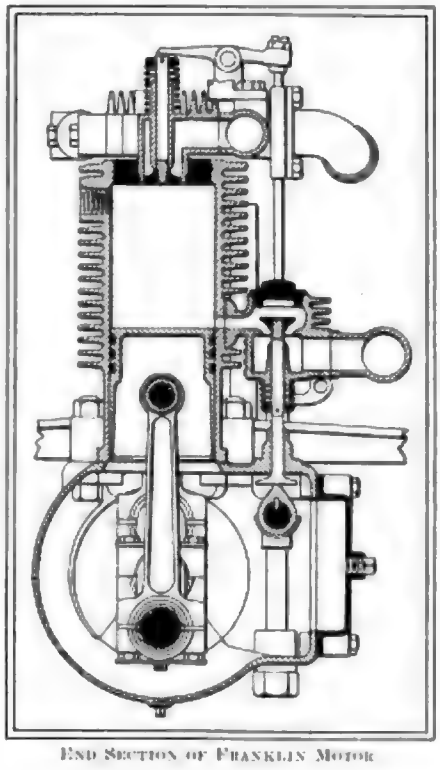
THE NEW STEARNS CAR

The F. B. Stearns Co., of Cleveland, O., has announced its 1906 model, a 40-horsepower machine. A large amount of imported material is used in the construction of the car and all material requiring strength is carefully analyzed and tested before being used; arrangements for such tests having been made with the Case School of Applied Science, a large institution located a short distance from the Stearns factory and which has complete laboratories and large testing plants.

The frame used, in the new model, is 5-inch section pressed steel, 13 feet long and trussed to give it maximum strength. The rear springs are six-leaf, 50 inches long and are guaranteed for 12,000 miles. The front springs are of the same pattern and 40 inches long. Practically the entire weight of the car is between the wheels, giving a long wheel base; 119 inches. Standard wheels are 36 by 1½-inch rear and 36 by 4-inch front, but 34 by 4½ all round is furnished optional to buyers.

The four cylinders are cast in pairs, with water jackets surrounding heads and valves. The valves are of large diameter and placed in pockets brought out to give sufficient space. Cylinder fit is obtained by a process of lapping the cylinders and pistons with crocus after they have been ground. In this process the cylinders are revolved as well as the pistons.

Ignition is by means of a positively driven high-tension magneto operated through gear from the cam shaft, but a high-tension coil is furnished where specified. The carbureter is of the two-part float type. A lever on the steering wheel operates a throttle on the intake and at the same time opens a butterfly air valve at the side of the air chamber, the two being set for a fixed relation to each other when the car is shipped. There is a fixed



END SECTION OF FRANKLIN MOTOR

air opening below the chamber and a third supply of air is obtained through an automatic inlet at one side, which operates as the suction increases. There is a main gasoline tank having a capacity of 28 gallons at the rear of the car and pressure in this is maintained by a pipe from the exhaust. This pipe contains a device for filtering and removing dampness from the exhaust, and there is a pressure regulator which, within certain limits, will regulate the pressure in the tanks. Gasoline is fed to a 2-quart auxiliary tank on the inner surface of the dash. This tank is provided with a float which gives a constant gravity feed of gasoline in the carbureter. Gasoline enters the carbureter at the top and sprays over the needle valve, thus keeping it clean at all times.

A large tank, for lubricant, is placed at the right side of the frame, accessible from the floor of the front seat. Pressure in this is maintained by a pipe to the bottom of the tank from the water circulating system. This scheme of supplying oil pressure has been used by the Stearns company for several years. Oil is forced to six sight-feed lubricators on the dash. A little refinement in this system is that each copper tube is provided with a goose neck connection to the lubricator, so that by removing a couple of nuts, any of the leads may be removed, for cleaning and repairs, without interfering with the others. The motor and transmission bearings are lubricated by this system; other bearings either running in oil or supplied with grease cups.

The radiator, built by the Mayo Radiator Co., is built up of leaf copper and bolted to a cross member on the main frame. Surrounding it, but not touching at any point, is an aluminum housing, to which are attached the bonnet covers. By this means the radiator is not subjected to the strains which fall on the front of the car, and, it is claimed, that it will not rattle apart under severe usage. It is also protected against blows which usually break the radiator when the front of the car strikes an obstruction. Directly beneath it is a direct gear-driven centrifugal pump. By removing a cap below the radiator, this pump can be removed without touching the gearing or disconnecting any other parts. There is no other water tank, the circulating system being confined to the pump, pipes, jackets and radiator, having a capacity of about 8 gallons. A belt-driven fan, of large diameter, assists in the cooling, and an auxiliary fan is formed by the spokes of the flywheel.

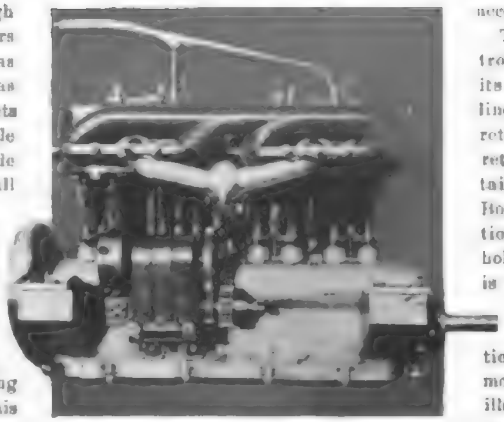
The transmission is placed well back in the frame. It is an aluminum case, accessible from the floor of the tonneau and the gears run in oil. The transmission is of the selective system, it being possible to pass directly from any speed to any other without passing through gears, and but one lever is used.

There are four speeds forward and

Digitized by Google

verse with the drive direct on the high speed. On any of the intermediate gears the secondary shaft operates but half as fast as the main shaft, instead of twice as fast, as in many transmissions. Two sets of the gear wheels are formed from single pieces to secure extra strength and wide surface in the hubs. Gear wheels are all No. 5 pitch, giving wide teeth, and they are made of Carpenter gear steel formed in Fellows shapers and tempered after they are formed. All bearings in the transmission axles and shaft are mounted on Hess-Bright imported ball bearings, which are of the two-point type and provided with oil retaining separators. A large bearing, of this type, is used on the shaft to take up end thrust. The shaft and rear axle are of Crome nickel steel tested to a tensile strength of 120,000 pounds per square inch. Heavy roller chains, at the sides, transmit the power to the rear wheels. The sprockets are covered so that they cannot be seen from the sides of the car.

There are two internal expanding brakes on the rear wheels, with an emergency brake having a 3-inch face on the transmission. The body is of cast aluminum with roomy tonneau and divided front seats. The finish is rich and the upholstering luxurious. The dash and floor plates are of aluminum, the latter having pebble tread.



STEARNS MOTOR, SHOWING MAGNETO

STEARNS SPEED CHANGE GEAR

MOTOR CAR LITERATURE

The Maxwell-Briscoe Motor Co., of Tarrytown, N. Y., has a 100-page book filled with commendation letters from owners of its machines.

Graphite, for October, contains an article on testing a steam plant, one on the use of graphite for rifles and another on the German automatic graphite cylinder lubricator.

Cooke & Hoffman, 394 Wabash avenue, Chicago, are mailing literature on the nonthrust clutch, sliding gear transmission and opposed Phelps motor. Two views of the combination and a detailed description are given.

La Petite, model A, manufactured by the Detroit Automobile Co., of Detroit, Mich., is described in a small catalogue published by the manufacturer. The only illustrations are a front and a side view of the car.

The Cincinnati Milling Machine Co., of Cincinnati, has a large catalogue in which all of its milling machines are shown in full-page views and the parts shown in smaller line drawings. Measurements of all parts of each machine are given.

The Winton Motor Carriage Co., of Cleveland, O., has in circulation a small advance booklet on its new model K. Illustrations are not used, but fourteen pages are filled with the new features of the machine.

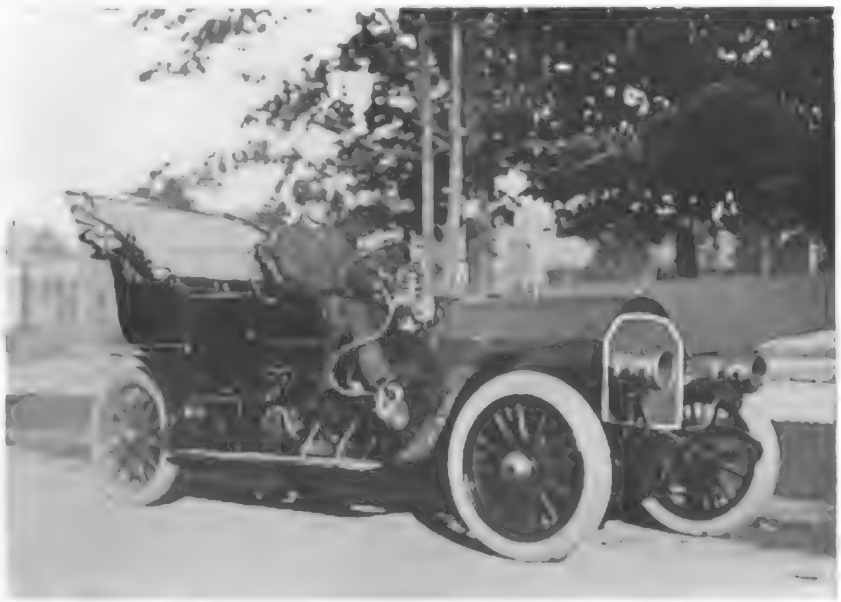
Everything in the motor car accessory line is shown in the present catalogue of the Automobile Equipment Co., of Detroit, Mich. The line includes chain boots, rain aprons, tops, brass trimmings, tires, lamps, carbureters, spark plugs, batteries, igniters, mufflers, tire casings, horns, tire pumps and other parts.

The Electric Appliance Co., of Chicago, is distributing samples of its paranite ignition cable for gasoline engines, samples of high and low tension wire being included. In addition it is mailing a catalogue of electric appliances, in which such parts as dry cells, spark coils, plugs, ammeters, switches, connections and pliers are included. Practically everything in the accessory line is included in the catalogue.

The Detroit Auto Specialty Co., of Detroit, Mich., has just issued a booklet on its radiators and bonnets. In the former line are shown the flat tube, honeycomb, return coil with water tank attached and return coil with independent tank. Details of the construction of each are given. Bonnet styles include the collapsible, stationary, and those hinged at the front. A hollow metal dash, suitable for large cars, is also shown.

The Davis Mfg. Co., of Milwaukee, Wis., manufacturer of hardwood specialties, has a two-cylinder, opposed, horizontal motor for automobile purposes, which is illustrated and described in the latest catalogue of the company. The company also shows a steel bin for containing automobile parts, which would be useful in the parts department of a big factory. The bin contains fourteen concave shelves, each shelf being divided into eight separate compartments, giving in all 118 separate, good-sized shelves.

The Scandinavian Fur & Leather Co., of New York city, has issued one of the best catalogues yet circulated on automobile wearing apparel. The clothing illustrated is suitable for motoring, motor boating and hunting. Leather chauffeur suits come first, followed by chauffeur cloth suits, overcoats, storm coats and rain coats. In the fur department are shown all styles of full length coats as well as combination coat and trouser suits. Over a dozen designs of hats and caps are shown, as are complete displays of lap-robes, boots, gauntlets, gloves and goggles. In the women's department are given all varieties of leather coats and skirts, cloth suits, plain rubber and satin-gum rain coats, dust coats in numerous styles, fur lines of many styles, head gears and goggles and veils, for summer and winter use.



THE 1906 STEARNS TOURING CAR AS IT APPEARS ON THE ROAD

Digitized by Google

Among Makers and Dealers.

PIERCE COMPANY'S AGENTS GATHER IN BUFFALO

Schebler in England—George Neil, 38 Fenchurch street, London, has been appointed English agent for the Schebler carbureter.

Barnes Now Secretary—Claire L. Barnes has been elected secretary of the Detroit Steel Products Co., He will also continue to act as manager of sales.

New Wayne Sales Agent—Jesse Draper, formerly of Peterson & Draper, has been named general sales agent for the Wayne car, made at Detroit, Mich.

Kingsley Changes—C. A. Kingsley, who has been identified with the Locomobile company for the past 3 years, will join the forces of C. S. Henshaw, the Thomas Flyer representative in Boston, next month.

Ohio Dealers Cleaned Up—Toledo automobile agencies report having sold about 300 new machines this season. One agent has a lone Waverley electric on his hands, but this is as good as sold, so the 1905 stock of automobiles in Toledo may be considered as fully cleaned up. About twenty different makes were handled by the different agencies.

Ford Branch for Buffalo—That the Ford is to be handled in Buffalo from a branch store is a certainty. The Ford company has leased the store in the Rich building on Main street next to the store just opened by the Continental tire people. The time for the opening of the Ford's Buffalo branch has not been set, but it is reported in automobile row that it will be very soon.

Reo's 1906 Output—R. M. Owen, sales manager of the Reo Motor Car Co., returned to New York last Saturday, having completed a western trip of 3 weeks, which had mainly to do with the establishment of Reo agencies for 1906 and extended as far west as Omaha, Neb. Mr. Owen says that ground has been broken for an addition to the factory at Lansing, Mich., which is expected to increase the capacity of the plant to at least twenty cars a day, and estimates the 1906 output of the Reo at 4,000 machines of various types.

A Thomas Rally—A meeting of all the Thomas agents will be held in Buffalo at the factory this month to inspect the new models and exchange plans for 1906.

Cramer Changes Cars—J. A. Cramer, of Buffalo, who loses the Ford agency through the establishment of a Ford branch in that city, has signed contracts for the Marion and Premier for 1906. He may take other lines also.

Big Lot of Tires—One hundred sets of tires make an imposing array when piled up on the dock of the steamboat company, ready for shipment to America. The Continental Caoutchouc Co., of Hanover, Germany, recently sent a big consignment to its representative in the United States, the company of which Emil Grossman is the presiding genius.

Pike's Peak Roads Poor—R. E. Olds, president of the Reo Motor Car Co., with the idea of entering a 16-horsepower Reo in the Pike's peak hill-climb, recently visited Denver. An examination of the course, he declares, convinced him that it would have been quixotic for any car to undertake the climb, the roads being in an unsafe and impassable condition.

Pierce Agents Photographed—During the recent visit of the Pierce agents at Buffalo, when they talked over 1906 business, a photograph was taken of the men who sell the Pierce. Some of them lined up in front of the Albright art gallery in Delaware park and the camera caught them in this order, reading from left to right: Charles Sheppy, the Pierce company's experimental man; W. H. Ellis, salesman in the eastern Pierce territory; J. H. Jerome, of the Harrolds Motor Car Co., of New York; R. W. Slusser, sales manager of the Harrolds Motor Car Co.; J. W. McGuire, Boston agent; H. Paulman, Chicago agent; F. B. Bower, president of the Enterprise Oil & Supply Co., Buffalo, N. Y., and th three demonstrators used by the Pier company in making tests.

Gets Pierce Contract—The Autocoil C of Jersey City, N. J., has been award the contract to furnish all the igniti apparatus for the Pierce cars for 1906.

Hawley Switches—George E. Hawl formerly associated with the Auto Equ ment Co., of Detroit, is now secretary a general manager of the Gray Mfg. (67 Larned street, Detroit.

Moves To Union City, Ind.—The T Electric Co., manufacturer of automob and gas engine specialties, has remo its plant from South Bend, Ind., to Un City, same state, where it has secu larger quarters in the building form occupied by the Union Automobile which has removed to Anderson, Ind.

New Gear Company—The Barnes G Co. has been incorporated at Oswego, Y., to manufacture steering gears other automobile parts. The capita $50,000, divided into 500 shares of $ each. The incorporators of the comp are Charles O. Barnes, Marcia Bar Thomas Moore, Charles A. Bentley Fred V. Murdock, all of Oswego. Barnes holds the patent of a stee gear which will be manufactured by new company.

After a Boat Line—The Toledo M Car Co., of Toledo, O., is contempla putting in a line of gasoline motor p boats next spring. The concern is loo for new quarters, hoping to have a b ing erected by early spring which be double the size of the Madison av garage. In the event of the concern's cess in finding a suitable location, a sp section will be allotted and espec equipped for motor boats, another for tric vehicles, and another for gasoline

Winton Car In Buffalo—Great int was shown by Buffalo motoring enthu in the exhibit in the special car o Winton company, which reached that on Wednesday morning of last week remained until Thursday night. The taur Motor Co.'s staff kept a cor string of people going to the car as it in the railroad yards. The Centaur pany has taken the Winton agency from the Jaynes company, which ha viously taken the Packard away fro Centaur people.

Temple Makes a Change—Ralph T. for the past 2 years representin Franklin in Chicago, announced this that he had given up the agency fo car and that for next year he would his leader the Panhard, which he w port directly from France. He ha taken on the Reo, which heretofo been handled in Chicago throu agency, the Reo Automobile Co. A line, the Premier, will represen air-cooling line. The Temple st located at 310 Michigan avenu an innovation will be the remov

Digitized by Google

the repair department to an adjacent building, so the big floor space can be devoted solely to the retailing of automobiles.

More Room Wanted—Although the Whitlock Coil Pipe Co., of Hartford, Conn., has doubled its facilities and put up a new building, which gives it 35,000 feet of additional floor space, it is considering the advisability of putting up another building of the same size.

Cutting Takes the Olds—Gen. John C. Cutting, well known as the organizer of one of the prominent metropolitan agencies, who retired last winter on account of ill-health, has entered the retail field again. He has secured the New York agency of the Olds Motor Works and has organized the Oldsmobile Co., of New York. Selling headquarters have been established in a commodious and handsomely equipped store at 1653 Broadway, formerly occupied by Frank A. Sanford, the Yale agent.

Hustle at Adrian—The Adrian Steel Co., of Adrian, Mich., which makes a specialty of crucible steel castings, is running a six-hole, twenty-four-pot furnace with a capacity of from 3 to 4 tons of crucible steel castings a day and announces that it is in receipt of many orders from automobile and gas engine manufacturers. The company is incorporated at $30,000, with the following officers: G. B. M. Seager, president; E. N. Smith, treasurer, and B. M. Gardner, secretary and general manager. Many orders are at hand.

Mercedes Business—According to figures furnished the European edition of the New York Herald, C. L. Charley will have done $4,000,000 worth of business for the Mercedes when the present year closes. He says he is planning to increase this to $5,000,000 next season and has ordered 864 chassis from the Mercedes factory. Of this number he claims to have already sold all but 264, which will be handled for the Mercedes Palace in Paris. The Mercedes Co., of New York, is said to have ordered 175 of the 864; the Du Cros Mercedes, Limited, of London, 215; Mercedes Palace, Florence, Italy, 50; Paris agency B, Charles Wenzel, 50, and Paris agency C, E. Lamberjack, 40.

Quick Tire Change—The four men sent abroad by E. D. Winans, importer of Michelin tires, to learn the trick of quick tire removal and replacement, for employment in the Vanderbilt race, gave an exhibition last week at the Fiat garage, New York. The crew numbered three men to a wheel, and in the first trial they put on a new shoe and tire in 4 minutes 15 seconds, while in their second trial they reduced this time to 2 minutes 42 seconds. To remove the tire of a racing car, one man sticks a knife right through the shoe and inner tube to let out the air, while the other two men rip it off. A new shoe, with the inner tube partially inflated, lies close at hand, and while two men push and jam it in place the third man hands them the tools. Patent racing lugs are quickly snapped on, and by the time the security bolts are fastened the tube is blown up ready for use.

Synnestvedt Increases—The capital stock of the Synnestvedt Machine Co., manufacturers of commercial and touring cars, has been increased from $50,000 to $100,000.

Trade Warned—The Automobile Cover & Top Mfg. Co., of New York, issues a letter cautioning the trade against the use upon automobiles of horns of the character of its Gabriel horn, threatening to prosecute all violations of its rights.

Another New York Garage—The Palace automobile garage was formally opened this week at One Hundred and Twenty-fourth street near Seventh avenue, New York. It is a two-story and basement building 50 by 100 feet. Edgar M. Houpt is president of the company.

Bob Garden in New York—The Harrolds Motor Car Co., of New York, will devote itself henceforth to the exclusive exploitation and sale of Pierce cars. Robert D. Garden, of Philadelphia, well known in Chicago in the bicycle days as Colonel Pope's western chief and later in the Quaker City as the Overman representative, has been installed as the new manager of the concern.

Mercedes Their Leader—Smith & Mabley, of New York, are to be the exclusive selling agents of Mercedes automobiles in the United States. These rights have been secured from the Mercedes Import Co., of which M. Weinburgh, the pioneer street car advertising agent and equally well known as a member of the Omega oil syndicate, is president, and E. C. De Witt is treasurer, the importing company having purchased the American rights from C. L. Charley, of Paris. Thus for the first time in the history of their importation the Mercedes cars will be handled from a single depot. This depot will be the great garage which Smith & Mabley have built at Broadway and Fifty-fifth street and which will be taken possession of this week. Under the arrangement made with M. Charley, orders may be booked in this country for delivery abroad, and vice versa.

Moore Switches—G. P. Moore, who has for 8 years been connected with the Pope Mfg. Co., of Chicago, has gone to Pittsburg as manager of the Keystone Automobile Co. He succeeds J. P. Hanna, who is superintendent of the National Fireproofing Co., and was temporarily in charge of the Keystone.

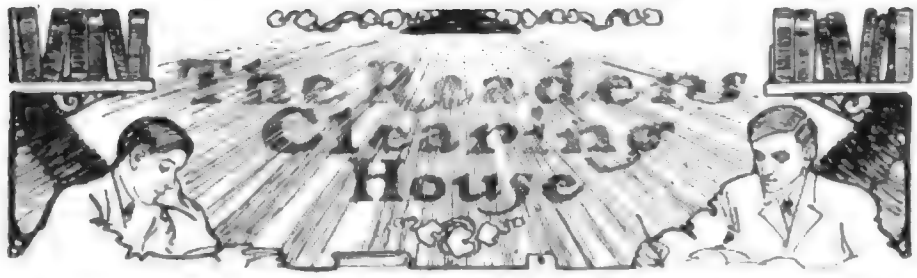
Knepper as Manager—The Frayer-Miller Motor Car Co. has been formed to act as distributing agent for the Frayer-Miller cars in New York, Connecticut and New Jersey. H. H. Knepper has been installed as manager. The company is seeking a suitable site for the establishment of its metropolitan branch. Its temporary headquarters are at 941 Eighth avenue, New York city.

Building in Providence—Such rapid progress is being made on the steel frame of the new automobile plant of the American Locomotive Co. on the westerly end of the property of the Rhode Island Locomotive Co., at Providence, R. I., that it is expected it will be ready for occupancy early in November. The three-story building will be nearly 400 feet in length and 60 feet in width when it is completed.

Takes On French Car—The Palais de l'Automobile, of New York, of which Mr. Neubauer is general manager, has secured the exclusive American agency for the Delaunay-Belleville cars, which are made at St. Denis, France. These cars were first shown at the Paris salon last year. Their makers have one of the largest factories in France, which has long been devoted to the manufacture of various parts entering into the construction of well-known French cars. The headquarters of the Delaunay-Belleville cars will be at 500 Fifth avenue.

Big Load of Continental Tires Ready for Shipment to America

Digitized by Google



BALANCING A MOTOR

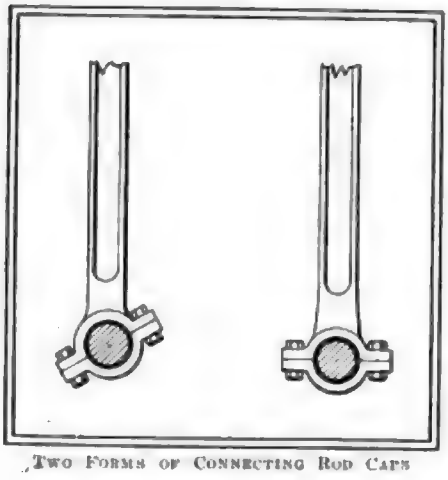
Bruin, Pa.—Editor MOTOR AGE—Will you please give, through the Readers' Clearing House, the best way to balance a crankshaft of a two-cylinder motor when the throws are together? Do you put counterbalance on crankshaft so the crank will just balance or do you use enough balance to offset the weight of the connecting rods?—E. D.

It is impossible to absolutely balance a reciprocating motor by rotating weights. The weights are usually applied to the crankshaft webs. On each web should be a weight, determined as follows: Multiply twice the weight of a crank web by half the crank throw in inches. Add to this the crank throw in inches, multiplied by the sum of the crank pin weight, five-eighths of the connecting rod weight, one-half the piston and pin weights. Divide the total by the distance in inches from the center of gravity of the counterbalance to the crankshaft. The result will be the weight of each counterbalance.

CONNECTING ROD CAPS

Syracuse, N. Y.—Editor MOTOR AGE—In the connecting rods used in some gasoline motors the cap at the crankshaft end is fitted obliquely to the end of the rod, as shown in the illustration, while in others it is attached horizontally. Is there any advantage in the former method of attaching the cap? What value is there in having the cap hinged at one side and secured at the other side by a bolt and not held by cotter pins?—J. C.

The proper use of the rod with an oblique split is when the design of the motor crank case renders the nuts more accessible, as for instance in the Winton type. Where these nuts are gotten at through a plate on the bottom of the case the split should be horizontal. A point not well taken, that has been brought up in favor of the oblique rod, is that in this case there is less thrust on the split and that the strain on the studs is more direct. A rod cap hinged at one end does not seem good practice, if the rod end bushing needs to be taken up.



TWO FORMS OF CONNECTING ROD CAPS

MANY QUESTIONS ANSWERED

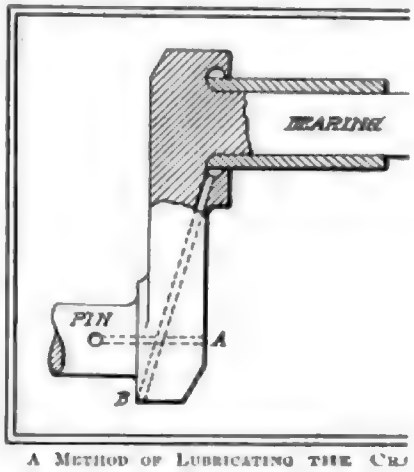
Stillwater, Minn.—Editor MOTOR AGE—Has any method of lubricating the cranks and other bearings in the crank-case proved more satisfactory than the splash system? I have started a design for a launch searchlight. I intend to have the dynamo generate currents at 80 volts, with a capacity of 1½ kilowatts. The searchlight will consume about 10 amperes; there will be two 16-candlepower lamps for lighting purposes and three colored lamps for side and tail lights. I also intend to have two sets of storage batteries of about 6 volts each. Would it be practical to use the three colored lamps as a resistance for charging the storage batteries from the 80-volt dynamo? What percentage of their rated candlepower would the lamps burn? I intended connecting the three lamps in parallel and then in series with one set of the batteries. With a good reflector do you think the searchlight will be strong enough for all purposes? Many people think that when a dry battery is once exhausted it is worthless. They are mistaken, for they can be recharged two or three times. To recharge dry batteries drill six or eight small holes in the bottom of a cell. Then get some jars or dishes that are about 1 inch larger in diameter and two-thirds as high as the cell. Dissolve ½ ounce of powdered salammoniac in the water so as to fill the jar. Then connect four cells of gravity battery in series and put the cells to be recharged in parallel with them and allow to remain over night. Wrap some sticky tape around the cell to cover the holes, and the cell is as good as new. Which is best, a two or three-blade propeller for a boat about 35 feet long with a 20-horsepower engine running at 900 revolutions and about what diameter and pitch should it be.—HARRY J. FORSYTH.

With the splash system a great deal of oil works into the cylinder and fouls the plugs. One maker uses oil in the crank case but not enough for the crank to dip. A wick is attached to the connecting rod end and it does dip in the oil and feed to the pin. Several makers use a scheme which carries the oil from the adjacent bearing to the crank pin. The construction is shown in the drawing, which is self explanatory After drilling the holes are plugged at A and B. With a good reflector the searc light should give a good light, although no as good as the acetylene searchlights on th market, which are attached to a tank of com pressed acetylene. The three lamps woul not be sufficient, as it would take a lon while to charge the batteries. The rate o charge—that is, the number of amperes t send through the batteries—will depen upon the battery capacity in ampere hour The makers will give you the charging rat Assume the rate to be 5 amperes and th each 16-candlepower lamp takes ½ amper then it will require ten 16-candlepower lam or five 32-candlepower lamps to obtain t resistance. Care must be taken regardi two things in connecting. The lamps mu be on the positive side of the charging cu rent and the positive charging wire mu connect to the positive battery pole. To d termine the polarity immerse both wires water containing a little sulphuric acid. ing then close together but not touchi bubbles will form at each wire, but on much more rapidly than the other. The which shows the greatest action is the ne tive pole.

RAILWAY INSPECTION CARS

Cincinnati, O.—Editor MOTOR AGE—C you furnish me, through the column of Readers' Clearing House, the names and dresses of companies manufacturing auto biles for railroad use? When automobi are used on the railroad, what is done w the steering gear after the flanged wh are attached, and will the other parts of machine require any special adjustments would like to know where I can se flanged wheels for my car, or if it woul advisable to purchase a machine spec built for railroad use.—E. T.

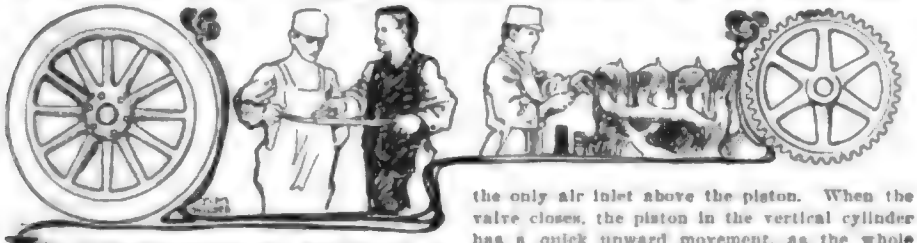
When the automobile travels on a road track, as Mr. Glidden recently tou the steering gear, of course, is not used may be locked. The wheels must be fla for the purpose. The Olds Motor W and Waltham Mfg. Co. have made se inspection cars and they probably coul range to furnish you wheels. With a fla wheel there would be no necessity for other special fitting on the car ch



A METHOD OF LUBRICATING THE CR

Digitized by Google

Current Automobile Patents



LETTERS patent No. 800,166, dated September 26; to Ralph L. Morgan, of Worcester, Mass.—The commercial truck of this inventor has a crane attached for assisting in unloading. The motor is placed anywhere beneath the platform of the car. Beneath the carrying platform is a cross shaft driven from the motor and on one end of this shaft, outside of the truck frame, is a capstan. The latter operates a jib-crane fastened to the side of the frame and which will swing over the load carried on the truck so that any of it can be removed and deposited on platforms either higher or lower than the truck. The boiler furnishing steam for the engine is carried on the front end of the truck. The same inventor has another device for attachment to his truck for aiding in unloading. It frequently happens that the platform of the truck is not on a level with the platform to which the goods carried have to be unloaded onto. To overcome this the truck is given a double bottom, the top one is pivoted to the upper ends of four short arms, one at either corner and the bottom of the arms are pivoted to the bottom platform. When the platforms are touching, these arms are resting at an angle. The front end of the top platform is connected to a piston working in a large horizontal cylinder beneath the driver's seat. Should the top platform be required to be raised to the level of the unloading platform, steam is permitted to enter the piston and the top platform is drawn forward, which movement raises it. In this manner it can be raised to any desired level.

Letters patent No. 800,614, dated September 26; to James R. Hubbard of Chicago—The invention relates a method of controlling the speed of a gasoline motor by restricting the opening of the automatic inlet valve. The illustration shows a horizontal motor with the inlet valve in the center of the head and the valve stem in a long cylindrical chamber. The end of the valve stem is connected through a lever and bell crank with a vertically moving piston in a vertical cylinder at the head of the chamber containing the inlet valve stem. The cylinder carrying the piston is closed at the top with a downwardly moving check valve, within which is a small opening. When the inlet valve opens it tends to draw down the piston in the vertical cylinder, which movement is restricted by the slow entry of air above the piston owing to the small opening, being the only air inlet above the piston. When the valve closes, the piston in the vertical cylinder has a quick upward movement, as the whole top of the piston, being a lifting valve, opens, allowing a quick closing of the valve. The small opening in the top of the piston for admitting air on the down stroke of the piston can be increased or diminished according to the needs of the motor.

Letters patent No. 800,497, dated September 26; to Stanley W. Shaw, of Galesburg, Kan.—The invention relates to the construction of the crankshaft of a gasoline motor, so that an enclosed flywheel can be used. The crankshaft has a single throw, being intended for a single cylinder motor. At either side of the crank pin is a large metal disk, with which the pin is integral, and the crankshaft is also integral. To the outer side of each disk is bolted a separate flywheel, which works within the crank case. The connecting rod has room to work on the crank pin between the disks.

Letters patent No. 800,337, dated September 26; to Floyd Burnham, of Fresno, Cal.—The inventor's tire for automobile wheels consists of two tubes, an outer one serving as a casing and an inner tube in which is constained an endless rope made out of hemp or other material. The object of the inner tube is to keep moisture away from the rope and thereby preserve its life.

Letters patent No. 800,308, dated September 26; to Albert De Laski, Peter D. Throop and Henry Deck, of Trenton, N. Y.—The clincher tire described has lips of rubber similar to the ordinary tires, but on the inner sides of the lips are facing grooves, in which lies a band or ring of soft rubber for holding the lips in the rim hooks. The soft rubber ring is in turn retained in position by a ring of harder rubber, which is held in position by the inflation of the tire.

Letters patent No. 800,281, dated September 26; to William Esch, of Chicago—The inventors' device is an automobile ice harvester, with a rotating cutter driven from the motor of the machine. The frame of the machine is rectangular, like the ordinary automobile frame, with the rear wheels used for propelling and the front wheels for steering. The cutter is driven by chain from the differential jack shaft. The steering wheels carry a central ridge on the tread to increase adhesion and on the rear wheels are metal disks for engaging with the ice for driving.

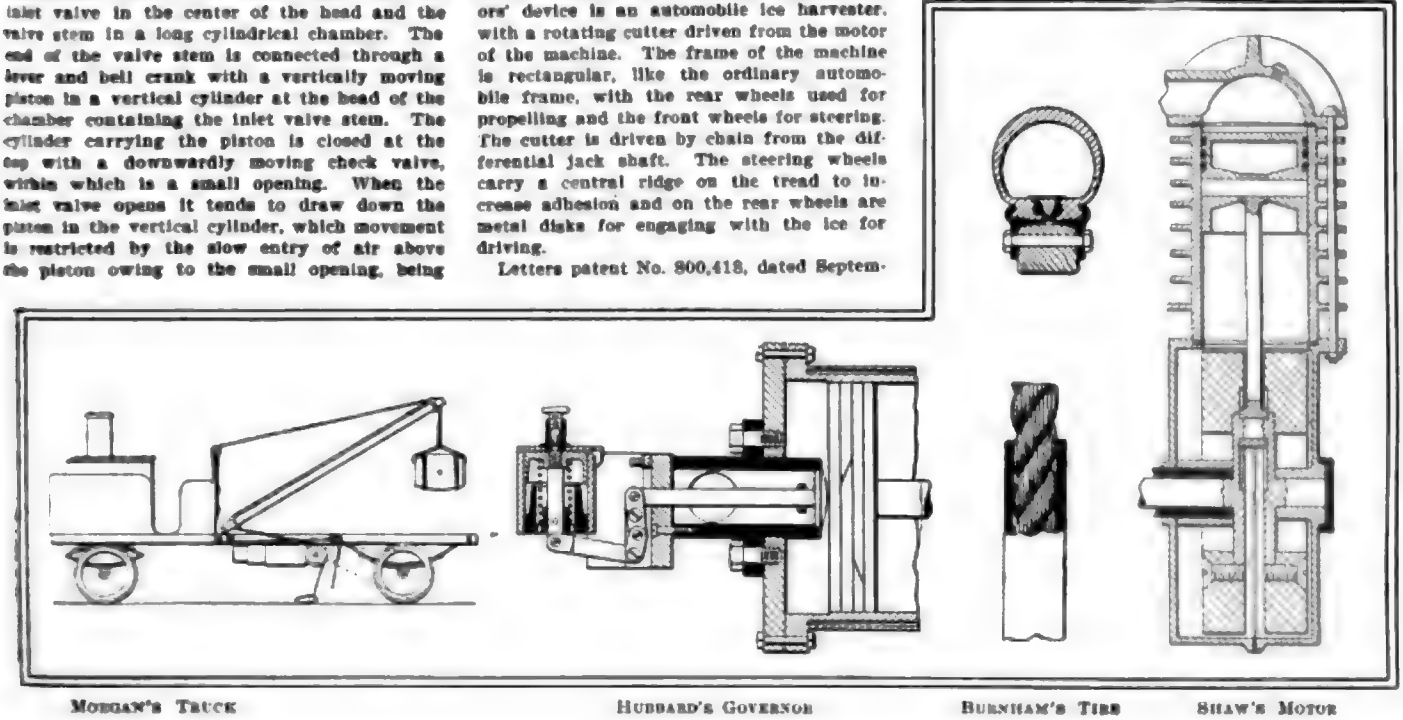
Letters patent No. 800,418, dated September 26; to Richard Varley, of Englewood, N. J.—The device is for controlling the spark and throttle of a gasoline engine. The circuit is opened by one mechanism and closed by another, both of which can be worked at any time in relation to each other or simultaneously. Arrangements are also included to throttle the explosive mixture to the motors at the opening or closing of the circuit. By shifting both the closing and opening mechanism the cycle of the engine can be altered.

Letters patent No. 800,269, dated September 26; to Thomas P. Corbey, of Columbus, O.—The device is for aiding in the removal of cushion tires. It consists of a lever, of bell-crank shape, with one arm serving as a handle and the other a tire engaging arm. Pivoted to the angle of the lever is a hook arm for engaging the vehicle wheel.

Letters patent No. 800,372, dated September 26; to Andrew J. Haskell, of West Bethel, Me.—The invention is a spark-igniter—starting mechanism for gasoline engines. The hammer-blow igniting mechanism is in the cylinder head and operated by a shaft paralleling the cylinder bore and carried on the side of the cylinder. On this shaft is a cam that works the inlet valve and is connected with the igniting device. This cam carries the igniting device until a certain instant, when it is released, permitting the spark to occur.

Letters patent No. 800,572, dated September 26; to William B. Hayden, of New York, N. Y.—The inventor has a mechanism for preventing the backward movement of the rear wheel of an automobile when ascending a hill and in making a stop when the brakes refuse to hold. Fixed to the wheel is a circular band, similar to the inside of a brake drum. In this band is a groove. On the axle is a spring-operated toggle that engages in the groove of the band. The toggle has a tooth which holds on the band and prevents back rotation but does not hinder a forward movement. The device is operatd by a pedal, and when not applied does not interfere with the reversing of the machine.

Letters patent No. 800,570, dated September 26; to James Hartness, of Springfield, Vt.—The inventor has what he terms a compensating bearing for road wheels of vehicles or other revolving parts. The shaft tapers but the journal does not. Between the journal and the shaft is inserted a tapered bushing.



Morgan's Truck — Hubbard's Governor — De Laski's Tire — Burnham's Tire — Shaw's Motor

Digitized by Google

From the Four Winds

SEEKING ROAD INFORMATION—AN EVERY DAY OCCURRENCE IN THE COUNTRY

Near the Mound City—Pretty bits of country roads are numerous around St. Louis. A motoring party in a St. Louis car recently investigated these picturesque highways with a camera, several fine views rewarding them for their trouble.

Some Farmers Progressive—Farmers who are not motorphobists are being discovered every day. In fact some of them are modern enough to attempt to educate their horses to recognize the automobile as an established institution and is willing to give out road information to the motoring touring party, while he shows the horse there is nothing to be afraid of in his greatest rival—the modern automobile.

Whoa, Dobbin!—The Automobile Association of Center County, Pennsylvania, has been organized with the following officers: President, George C. Watson, State college; vice-president, A. C. Mingle, Bellefonte; secretary and treasurer, Robert F. Hunter, Bellefonte. Executive committee, George C. Watson and C. D. Fehr, State college; John Porter, Lyon, and Robert F. Hunter, Bellefonte. The purpose of the association is not to antagonize horse owners but to promote the benefits of horse owners mutually with that of automobilists.

Latest in Furs—London furriers have gotten out their fall styles for motoring women. As seen in the cut on the next page, the woman in the car is wearing a coat of woolly cream serge, semi-fitting at the back, though loose in the front, with large sleeves widening at the cuff, which turn back and are fastened with a large pearl button. The lining is of squirrel, the sleeves being of the same fur, with wind cuff. The other coat is of Russian pony skin, the back piece being made from a single skin, with the natural dark line of the animal's back running down the center. Squirrel also composes the lining and a deep beaver collar and wide cuffs give it a wintry touch.

Dig Up Hatchet—The automobile war is in full operation again in Grand Rapids, Mich., the flying squadron of the police department having started the ball rolling by arresting four automobile drivers. Although the motorists have made no sign as to what their course will be, it is intimated that there will be something doing in a short time. There are several automobile cases awaiting trial in the circuit court, these having been appealed from the police court.

Quakers Wideawake—The Automobile Club of Philadelphia's tours and runs committee, which has charge of the preliminaries of the hill-climbing contest and the annual cross-country run, is actively at work on the details of those events, both of which will be pulled off some time this month. The cross-country run, which will be for the H. Bartol Brazier cup, will this year be over a four-cornered course totaling about 100 miles, and from the number of entries already received will far exceed in importance those of former years. The hill-climb will probably be held on Chestnut hill, from the Missahickon creek bridge to the railroad station on Main street. Other courses are being considered, but as Chestnut hill possesses the necessary qualifications for such a test it will probably be selected.

FRENCH PRESIDENT TRIES MOTORING

Out of the Ordinary—An unusual i dent occurred to B. J. Wenebel, a Pitts chauffeur, the other day. His autom collided with a fire plug, broke it off an street for two squares was flooded fo hour before the damage could be repa

Loubet's Debut—President Loubet France, made his first public appear as a motorist at the recent army m vers when he reviewed the soldiers from rear seat of his new C. G. V. autom Many of the generals of the French followed suit and motor cars were as as bears around a bee hive.

Graphic Trophy Race Off—A heav accompanied by a rain prevented the ning of the Graphic trophy contest o Isle of Man, billed for the day foll England's big Tourist trophy race. T cars had been nominated and the c was to have been over a 5-mile c In all probability the affair will be off on some course in the United Ki other than on the Isle of Man.

Hope for Kiser—Earl Kiser nee give up hope. Michael J. Dowling, speaker of the Minnesota house of sentatives, who is shy both legs, one a the fingers of his one hand, has just an automobile from Olivia, Minn., turn, a distance of 96 miles, in 7 The car is equipped with special ap so Mr. Dowling can use his artifici to advantage.

Doing Good Work—The Minneap M. C. A. has enlarged its course struction for automobile drivers, a endeavor to teach the principles gasoline engine, as applied to the bile, in a very thorough manner. course consists of twenty-four lesso lectures and practical demonstrat complete equipment of apparatus h installed, and the most prominent bilists of the city have consented operate in the conduct of the year Walter Milnor, a recent graduate Throop Polytechnic Institute, is structor.

Prominent German Killed—Th end of Adolf Altmann, president German Motor Technical Society ar known member of the German Mo has cast a gloom over German a circles, where the deceased was high esteem not only as a clever but also as a man. Herr Altm in harness. He and a Dr. Becher commissioned by a firm to be prese experimental exhibition of a new c by Engineer Schomburg for the p reporting on its practical and c value. The exhibition took place i at Breslau. In the course of the a terrific explosion occurred. Her owner of the cellar, and the luckles were killed on the spot; Herr Alt

Digitized by Google

Engineer Balmrek of the Gasmotorfabrik Deutz survived their terrible injuries a few hours only.

Wisconsin's Strength—According to the latest returns, the state of Wisconsin has more than 1,400 automobiles registered, of which number 410 hail from Milwaukee. Racine boasts fifty-six, Oshkosh fifty-four, La Crosse forty, and Madison thirty-eight.

Slow Pay—Ordinance Officer Murray G. Livingston and City Treasurer Steel are having their own trouble in collecting the city license fee from Pittsburg motorists. They have sent repeated polite requests to pay up, and, inasmuch as the city is "out" about $3,000 yet on fees, they say their requests will be followed soon by a score or more of law suits.

Foxy Bridegroom—Attorney Charles S. Estabrook, of Syracuse, N. Y., recently outwitted some friends who intended to follow him with automobiles to the railway station after his wedding and there perform the usual rice and old shoe throwing act. Mr. Estabrook was married to Miss Marguerite Curry, the daughter of a millionaire widow, at the latter's home at Magnolia, Mass. The friends had three automobiles in which they intended to jump as soon as they saw that the bride and groom were preparing to go to the station. Mr. Estabrook bribed some of the servants and in the darkness proceeded to disgear and dismantle the automobiles. After the ceremony the bride and groom changed their apparel and stole down a ladder, jumped into their automobile and were soon speeding on their way to the station. When the jokers woke up to the fact that they had gone, they rushed for the three cars. The necessary levers were manipulated, but the machines refused to budge.

Farmers Boycott—There are several towns in Ohio where automobiles are prohibited, or seemingly so. In Fayette County it is reported that a movement is on foot to form an organization for protection against excessive speeding of automobiles on the public highways. Some of the farmers carry revolvers for the purpose of popping over drivers who won't listen or obey the wave of the hand in slowing down when meeting fractious horses or teams on the highway. Others resort to stretching barbed wire across the roadway in front of approaching automobiles. So strong are the farmers against the advent of the automobile that it is said that the business men of Washington Courthouse, the county seat town, are prohibited from buying motor cars, the farmers asserting that when the automobile comes in they, the farmers, will go out. Other towns throughout the state are likewise affected. At Benton Ridge, 10 miles west of Findlay, the same spirit prevails. Jacob Whisler, who conducts a large general store and has an extensive trade with the farmers throughout the country, was about to purchase a fine Winton touring car during the summer, but he was politely informed by the farmers in that section that if he did they would withdraw their patronage. So he didn't.

Two Smart Motoring Costumes

After Better Streets—Members of the Automobile Club of America are urged by President Dave H. Morris to report to the new committee on city streets any New York pavements in bad condition, needlessly torn up or obstructed. The new committee has promised a needed reform in this direction and the club wants it to get all the necessary information.

Unknown Pays Fine—Chief Saddington, of Ogontz, Pa., who has become the terror of ordinance-breaking automobilists along the Old York road, north of Philadelphia, had the unique experience last week of being paid a fine of $12.62 and not knowing from whom it came. A car drove up to his residence during his absence and the occupant, without a word to Mrs. Saddington, handed her the amount and whisked away without leaving his name. The chief believes the money came from one of a number of Philadelphia motorists whose car numbers were caught and who were notified to appear before him for punishment for fracturing the local speed laws.

Antipodean Hill Climb—The Automobile Club of Australia recently promoted a hill-climb which attracted fifteen competitors, divided into four classes. The Marobura hill at Coogee, near Sydney, was used, the course being about 500 yards, with the grade running from 1 to 4 and 1 to 12. There were two sharp turns. The competition for 6-horsepower cars and under was won by P. O. Sherwood, in a de Dion, in 3 minutes 14 seconds; the event for 8-horsepower cars and under went to P. Britz, in an 8-horsepower Richard-Brasier, in 2 minutes 40⅘ seconds; the third division, for 12-horsepower cars and under, to M. Maillard, in a 10-horsepower Richard Brasier, in 2 minutes 19⅗ seconds, and for the cars over 14-horsepower to O. G. S. Lane's 16-20-horsepower Martini in 1 minute 40 seconds.

To Amend Road Laws—In view of the present laws not providing for the building of new roads or the keeping in repair of those already constructed, the prosecuting attorney and the county commissioners of Lucas county, Ohio, of which Toledo is the county seat, will go before the next legislature with two bills, one providing for the building of new stone roads, the other creating a fund for the maintenance of those now constructed. It is proposed that the state pay part of the expense of constructing new roads, the county another portion, the township a third and the property owners who reside along the thoroughfare to be improved a fourth; that the farmers to be assessed according to the acreage of the farms. For repairs, it is proposed that crushed stone be placed in sufficient quantities along macadamized roads, and upon the discovery of ruts, the farmers may make repairs.

One of the Garden Spots to be Found Near St. Louis

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

New York—Smith & Mabley have opened their new garage at Broadway and Fifty-sixth street.

Charleston, S. C.—The Sumter Automobile Co., of Sumter, has been incorporated with a capital stock of $2,000.

Albany, N. Y.—The Gas Engine Whistle Co., of New York city, has filed articles of incorporation, with a capital stock of $10,000.

Philadelphia, Pa.—Metzger & Wells are estimating on an automobile garage to be built at 220-222 South Fortieth street for F. K. Mears.

Chillicothe, O.—A new addition to the Logan Construction Co. is in process of construction and probably will be completed about October 20.

Los Angeles, Cal.—The Pacific Pneumatic Wheel Co. has been incorporated with a capital stock of $100,000, of which $90,000 has already been subscribed.

Hastings, Neb.—In addition to the Olds, which they handle in western Nebraska, L. C. Jones & Co. have taken on the Franklin. They will also build a large garage and repair shop.

Milwaukee, Wis.—An involuntary petition in bankruptcy has been filed against the Western Auto Supply Co., 235 Virginia street, the amount of the claims filed being $559.75. No receiver was appointed.

Baltimore, Md.—A new garage is about to be built by M. Gillet Gill, at the corner of Mount Royal and Maryland avenues. Quarters for the Automobile Club of Maryland will be arranged on the second floor of the building.

Bay City, Mich.—A new automobile factory is to locate here. The work on the new buildings is to commence immediately. Seventy-five thousand dollars' capital is necessary to secure the enterprise, of which $50,000 is already in sight.

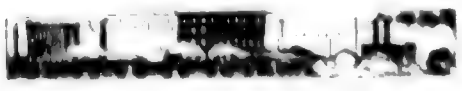
City of Mexico, Mex.—L. G. Browne has applied for a concession looking towards the establishment of a bicycle and automobile factory. The petition promises a great reduction in the price of bicycles and automobiles, providing the concession is granted.

New York—The Manufacturers' Motor Car Co. has leased a large building at 65 West Forty-third street and is installing machinery for automobile repair work. It will deal in new and second hand cars. Ralph B. Notterman is general manager and L. N. Ellis is secretary of the company.

Birmingham, Ala.—The Van Dusin Motor Car Co. will soon erect a new garage, probably on First avenue between Twentieth and Twenty-first streets. There will not be a single post in the building, the large frame being supported by the walls. It is estimated that the building will cost $10,000.

Minneapolis, Minn.—The contract to build a new garage for the Fawkes Auto Co., on Sixth street, has been awarded to J. L. Robinson. The cost is placed at $20,000. The Fawkes Auto Co. is the name by which the Minneapolis branch of the Great Western Cycle Co. is known. The company has another branch in St. Paul.

New York—A new garage is being built on the site of the old Dakota stables, at Broadway, Seventy-fifth street and Amsterdam avenue, right in the heart of the apartment section of Manhattan. Preliminary plans have been prepared by the Ansonia Garage Construction Co., the capital stock being $450,000. W. H. D. Stokes is president of the garage company.



Springfield, Ill.—The Illinois Automobile & Parts Co. has been incorporated with a capital stock of $10,000.

Columbus, O.—The American Pneumatic Wheel Co., of Lorain, has been incorporated with a capital stock of $50,000.

Pittsburg, Pa.—The Banker Bros. Co. has its new garage under roof, which will give it about as much space as it had in its old one.

Hartford, Conn.—The Palace Automobile Station has renewed its contract with the Thomas Co. and expects its first 1906 models next month.

Philadelphia, Pa.—E. C. Johnson, late of the Quaker City Automobile Co., will hereafter represent the White Sewing Machine Co. in Philadelphia.

Albany, N. Y.—The International Guayale Rubber Co., of New York city, incorporated with a capital stock of $50,000, will soon commence business here.

Springfield, Mass.—The Springfield Automobile Co. is now located in its new place, the Cooley house garage, which it believes is the largest and best equipped in New England.

New York— The Mills-Kennedy Co., which has been incorporated to deal in automobiles, has for its officers: President, Edward P. Kennedy, 91 Commercial street; clerk, A. B. White, 84 State street, Boston; treasurer, A. Ernest Mills, 57 Columbia street, Brookline, Mass.

Rome, N. Y.—A company has been incorporated for the manufacture of automobile radiators, spiral tubing and other specialties. The capital is $50,000. The name of the concern is the Long-Turney Mfg. Co., which is a branch of the Long Mfg. Co., of Chicago.

RECENT INCORPORATIONS

Oswego, N. Y.—The Barnes Gear Co. has been incorporated to manufacture steering gears and supplies for automobiles; capital, $50,000. The incorporators are Charles O. and Marcia I. Barnes, Thomas Moore, Charles A. Bentley and Fred V. Mardock, all of Oswego.

Augusta, Me.—The Gearless Transmission Co. has been incorporated to manufacture motor vehicles; capital, $500,000. Its president and treasurer is I. I. Fairbanks; clerk, L. A. Burleigh, both of Augusta.

New York—The Griswold Mfg. Co. has been incorporated to deal in automobiles; capital, $25,000. Its president and treasurer is Robert G. Griswold; clerk, R. L. Tappenden, both of Quincy, Mass.

Albany, N. Y.—The Stoddard-Dayton agency, of New York city, has been incorporated with a capital stock of $15,000 for the purpose of manufacturing and selling automobiles.

Boston, Mass.—Articles of incorporation have been filed by the Mills-Kennedy Co., which proposes to deal in automobiles. The company has a capital stock of $25,000.

Albany, N. Y.—The Hydraulic Motor Service Co. has been incorporated with a capital stock of $100,000. The company is located in New York city.

Hartford, Conn.—The Miner Garage Co. has been incorporated with a capital stock of $10,000, to deal in, store and rent automobiles.

Albany, N. Y.—The Newcomb Motor Co., of Harrison, Westchester county, has been incorporated with a capital stock of $400,000.

Springfield, Ill.—The Holyman Autom Co. has increased its capital stock $350,000 to $500,000.

Indianapolis, Ind.—The Premier Motor Co. has appointed W. Crosby, of Los A les, its agent for southern California.

Baltimore, Md.—J. L. Caldwell is to build a one-story brick garage at grove and Adams alleys. The cost wi $1,500.

Pittsburg, Pa.—The Pittsburg Motor cle Co. has absorbed the Shadyside Co. and is building a new factory on merlea street.

Philadelphia, Pa.—Plans have been by F. H. Kreisler for an addition to th tomobile garage at 220-222 South Fo street, for F. K. Mears.

St. Louis, Mo.—A. L. Dyke has orga the Auto Supply Co., with himself as ager. W. Mulford is president and T. W and E. A. Sluder stockholders.

Pittsburg, Pa.—A company has bee ganized to build a new automobile fi on Summerlea street. All kinds of au biles are to be manufactured. A bu to cost $100,000 is to be erected.

Lockport, N. Y.—The American D Steam Heating Co.'s plant has turned big automobile truck, which will carry of several tons. The truck will be u the North Tonawanda plant of the com

Toledo, O.—T. C. Whitcomb, of Clev who opened up a branch automobile a at 811 Jefferson avenue, early last has decided to quit Toledo, the agenc ing closed last Saturday. The Toled proved unsatisfactory.

New York.—A new agency will be lished to handle the Stoddard-Dayto C. H. Hill will be vice-president and g manager, and James McIlvrid is to retary and garage manager. The will open about November 1.

Dundee, Mich.—The Wolverine Auto & Commercial Vehicle Co. was recenti for the purpose of manufacturing an ing automobiles, supplies, accessorie gasoline engines. The capital stock 000, divided into 2,000 shares, the c ling interest being held by H. J. Hu Detroit. A plant will be erected at

Pittsburg, Pa.—The Hiland Automo is preparing to build an addition to rage on Beatty street, opposite th house. The new building will be 40 feet and will be double the capacity present garage, the company's storag being 35 cars. The officers are: Pr Dr. John A. Hawkins; treasurer, Dr. Uring; manager, W. A. Richwine.

Nashville, Tenn.—The Southern Aut Co., formerly capitalized at $10,000 ar ing a garage on Third avenue, has b organized and a provision made in th ter for the capitalization of the com $100,000. W. J. Cummins is presid E. E. Sweeney secretary and genera ager. The company handles the Wh dillac, Stanley, Yale and Franklin.

Middletown, Conn.—A civil action has been brought against William H president of the Simplicities Auto C interfered with the purpose to wind affairs of the concern. The Warwic & Automobile Co., of Springfield, has proceedings against Mr. Kitto to $1,000 loaned him, and the Simplicit pany, which is indebted to him, ished for the amount involved.

Digitized by Google

American Motor League

OFFICIAL BULLETIN

OFFICERS

ISAAC B. POTTER, President,
Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres.,
Reading, Pa.
W. GRANT MURRAY, Second Vice-Pres.,
Adrian, Mich.
J. W. MERRIHEW, Third Vice-Pres.,
154 Nassau St., New York.
FRANK A. EGAN, Secretary,
32 Nassau St., New York.
HENDRICK B. HILL, Treasurer,
2 Binford St., Boston.

National Headquarters
Vanderbilt Building New York

THIS LEAGUE

Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

OFFICIAL STATIONS

The following appointments of official stations are announced: Willows, Cal., Willows Cyclery & Garage, 441 Tehama street, Smith & Platt, proprietors; Dayton, O., Miami Motor Car Co., 117 East Second street; Stroudsburg, Pa., Stone's Automobile Works, 1009 Main street, Clarence Stone, proprietor. All proprietors of official stations are under contract which requires them to allow a discount of 10 per cent on all bills for repairs and supplies for American Motor League members, but this discount applies only to bills of $1 and upward, and is allowed only upon presentation by the member of his unexpired membership ticket, which suggests the necessity of prompt renewals.

PROTECTION DISKS

Two stolen automobiles were reported at league headquarters last week. It is, of course, certain that these thefts will continue and increase as the use of the motor car becomes more general. The American Motor League protection disk tells its own story. It is shown by cuts on this page. It is covered with red leather and may be attached to the automobile without danger of scratching or marring the polished surface of the vehicle. The disk is supplied with a strong red silk cord which passes through a hole on the leather-covered tag, by which it may be attached to any convenient part of the car. The American Motor League will protect members from theft and from personal injury in every possible way. It offers $100 reward for the conviction of any thief who steals an automobile bearing one of these protection disks, and $25 reward for the conviction and punishment of any offender who injures the person or property of an American Motor League member while on the public roads.

$25 REWARD
WILL BE PAID BY THE
AMERICAN MOTOR LEAGUE
For the conviction of any offender who maliciously injures the person or property of a member while riding on the public road.

IN CASE OF THEFT

The league, on receiving information of the theft of any registered automobile belonging to a member, will immediately send notice and full description of stolen car to the police authorities of the various towns within a radius of several hundred miles from the place of theft with notice also of the reward offered for the conviction of the thief. The name and address of the owner of the stolen vehicle will be given, and notice will be sent to him at once in case the thief is arrested or the vehicle recovered. Similar notice will be sent to the various dealers in second-hand machines who will be thereby warned against purchase of stolen vehicles and who will also be able to identify and detain the thief who offers the stolen property for sale. Notice will also be sent to the automobile papers, and to the prominent newspapers—there being a large number of the selected list at league headquarters—and every effort will be made in each case to recover the property and convict the offender.

ASSAULT CASES

In case of assault the member whose person or property is injured should at once secure the arrest of the offender and have him taken before the nearest magistrate. If necessary counsel can be secured, or the aid of the public prosecuting attorney invoked and the criminal thus brought to punishment. The reward of $25 in such case will be paid only for the conviction which leads to the punishment.

NEW LEAGUE CLUB

The Monmouth Automobile Club, of Monmouth, Ill.—John S. Browne, president, and Alan W. Pattee, secretary—met last week and joined the American Motor League in a body. The Monmouth club will hereafter represent the league in all local work in the Monmouth district. The following members of the club have been appointed consuls: Will Bartlett, Cleo C. Duke, J. Ralph Firoved, W. H. Grooms, Morton Humphreys, William Mason, A. C. McIntosh, Roscoe McKinley, Fred B. Pattee, Dr. A. G. Patton, James Root, George A. Schussler and Fred Weir.

Other consuls have been appointed as follows: Fred H. Waldron, New Haven, Conn.; Max Siepermann, Manhattan, N. Y. C.; Dr. William Martin, Bristol, Pa.; Arthur W. Clark, Conshohocken, Pa.; George F. Armsby, Vineyard Haven, Mass.; Henry E. Knapp, Menominee, Wis.; Newton H. Davis, LaRue, O.; Charles F. Keene, Beaver, Pa.; Oliver O. Jarrard, Mauch Chunk, Pa.; J. Elmer Wood, Beverly, Mass.; A. M. Haines, Bay City, Mich.; H. P. Strasbaugh, Aberdeen, Md.; Charles B. Kennedy, Madison, S. D.; E. S. Stearns, Thomaston, Me.; Arthur C. Jackson, Philadelphia, Pa.; Thomas T. Firth, Philadelphia, Pa.; Horace Brock, Lebanon, Pa.; and Fred M. Smith, of Hibbing, Minnesota.

Digitized by Google

WINTON

Economy of Up-Keep

A $3500 car for $2500—the new Winton Model K. A **thousand** dollars saved on purchase price.

And then you save on **Up-Keep.**

Up-Keep is the price you pay for service—mileage—after you buy a car and pay for it.

Up-Keep includes the cost of Fuel, Oil, Repairs, Replacements, and Tire expenses.

All these items hit your pocket-book.

Therefore, **Up-Keep** is vitally important.

Now, let's consider Fuel and Oil.

The new Winton Model K saves fuel—

1. By the use of an economical carbureter, designed especially for the cylinder capacity, power and speed of Model K.
2. By using all the gas that enters the cylinders, and not wasting any part of it.
3. In perfect fitting bearings, which reduce friction.

Model K cylinders retain their charge over night. So, you can start the motor from the seat the next morning **without cranking.** That means you can stop your engine whenever and wherever you stop the car, thus wasting no fuel in unnecessary engine running. Also, it means that Model K cylinders are perfectly ground and **do not leak compression.** Cylinders not perfectly ground waste compression at every piston stroke, and that waste costs money—just like pouring expensive gasoline into a pail with a hole in the bottom. But Model K cylinders turn every drop of gasoline into **power** to propel the car.

But, even with perfect compression, as on Model K, your engine will waste power unless all bearings fit perfectly, are of right material, and have wide bearing surfaces. Every ill-fitting bearing means **friction.** To overcome friction the engine must use part of its power, and that power used to overcome friction can't be used to drive the car. That, too, is wasteful of money. You save all this by using a Winton Model K, for its bearings are large, perfectly smooth, and of material that shows least wear. A 50 h. p. motor with poor bearings eats more gasoline and oil and produces less traveling power than the 30 h. p. motor of the Model K.

Model K saves oil—

1. By being water-cooled.
2. By the use of the Precision Oiler.

Automobile engines are either water-cooled or oil-cooled (sometimes erroneously called air-cooled).

Water is cheap. Oil is expensive. Model K is water-cooled for that reason—for the same reason that one bathes in water and not in champagne. But, of course, there's no law against oil-cooled motors: you may use that kind if you don't care for expenses.

Then the Precision Oiler. Feeds oil to each bearing in just the exact volume needed. No waste through flooding seven bearings in order to give the eighth bearing just enough oil. Then this Oiler feeds oil in direct proportion to the speed of the motor. Thus when you run slow you are not wasting oil that the bearings do not need. Further still, this Oiler has **shot-gun force** and gets the oil to the bearings in any weather, even the coldest. Oil can't clog in the pipes. Each bearing fed separately, so that oil intended for any one bearing must reach that particular bearing. We have been studying oilers for 10 years and this Precision Oiler is the best we have ever seen. That's why Model K has it.

There are other ways in which Model K cuts down **Up-Keep** expenses. Let us tell you about them. Catalog No. 2 is ready.

THE WINTON MOTOR CARRIAGE CO., Member A.L.A.M. Cleveland, O., U. S. A.

Model K Trans-Continental Show now en route from Boston to San Francisco, visiting all the big cities. Be sure to see it.

Digitized by Google

CENTAUR MOTOR CO. REPAIR ORDER No. 4528

NAME Lorenz ADDRESS DATE RECEIVED 8/3/05

KIND OF CAR Cadillac F WHEN WANTED DATE DELIVERED

Look car all over and put in shape for a run to N.Y.

INVOICE No. 10250

Cadillac Economy

LAST Spring Mr. Henry A. Lorenz of Buffalo, N. Y., purchased a Model F Cadillac of the Centaur Motor Co. of that city. After running it for some months, he decided to make a run to New York City, and as a matter of precaution, took the car to the Centaur Co. to have it "gone over."

These reproductions of the repair order and the postal card sent by Mr. Lorenz on his arrival in New York, show the expense and the result.

RECORD OF LABOR.

NUMBER OF THE JOB ORDER	NATURE OF WORK DONE	TIME HRS.	TIME MIN.	AMOUNT
6779	Tightening connecting rod & high speed clutch		30	.30
6799	Adj. Carburetor		15	.15
	TOTAL LABOR			.45

RECORD OF MATERIAL AND SUPPLIES.

STOCK NUMBER ORDER NUMBER	DESCRIPTION OF MATERIALS	PRICE
	TOTAL MATERIAL, ETC.	

PAID INVOICE No. DATE CHARGES .45

RECEIVED AND APPROVED. Henry A. Lorenz SIGNATURE OF CUSTOMER

Dear Jess—

Got to New York last night at 7 o'clock with Cadillac all OK

Henry A. Lorenz

New York Aug. 1st 05.

There may not be much in the Cadillac for the repair shop end of your business, but Cadillac dealers say there's a whole lot of satisfaction for their selling departments.

CADILLAC AUTOMOBILE CO., Detroit, Mich.

Digitized by Google

WHEN YOU PAY MORE

Model 4B

$1500

for a touring car or runabout than our price, you are paying for features which you get without extra charge in the

An ideal touring car at an ideal price. 18-20 h. p. (4-cylinder vertical motor). $1,500. One h. p. for every 85 pounds of weight. *No radical features or untried devices for which you will have to pay for the experiments.*

It embodies the best features of the most famous cars, but it is different in at least one essential—price. A 4-cylinder touring car at $1,500 seems unusual, you say? It is *more* than unusual—*it's wonderful.*

MITCHELL

It is not only **"the car you ought to have at the price you ought to pay"**

Model 2B

$750

It is **more.** It is absolutely the best car—the most perfectly constructed—the most simple to operate and the most stylish in appearance on the American market. You cannot **possibly** do better than to buy a **Mitchell.**

2 cylinder, 9 h. p., vertical motor, mounted in front. This Runabout is as carefully designed, as up-to-date and smart in appearance as any three or four thousand dollar car ever built. It has amp'e power for all conditions of road and its hill climbing abilities are unsurpassed. It is *all* that *any* man may want in a Runabout.

WRITE FOR CATALOGUE

MITCHELL
Motor Car Co
RACINE, WISCONSIN

Member American Motor Car Manufacturers' Association, Chicago

Digitized by Google

LIKE A HOUSE A=FIRE!

Like a house a-fire we have gone—are going—and will continue to go after 1906 orders of HOODS [any size or style] and

RADIATORS

Quality Best at the Prices.
Prices Lowest for the Quality.
PROMPTNESS OF DELIVERIES GUARANTEED.
What else can ANY buyer desire?

WRITE TODAY

DIAMOND STAMPED WARE CO.
DETROIT MICHIGAN

Digitized by Google

MICHELIN

Every important race in 1904-1905 in every country in the world was won on MICHELIN TIRES.

The largest tours made all over the world have been made on MICHELIN TIRES.

Each automobile wheel equipped with MICHELIN TIRES will carry more guaranteed weight than any other pneumatic tire made in the world.

Thus in racing, touring, and carrying weight, MICHELIN TIRES have proved beyond a doubt their superiority and the facts are incontestable.

MICHELIN TIRES cost more—They wear longer.

If you keep tabs on your tire expenses for one year you will find MICHELIN TIRES 50 per cent cheaper than any other.

MICHELIN TIRES do not rim cut—MICHELIN TIRES are safer.

Insist on MICHELIN TIRES for your 1906 car.

MICHELIN round tread touring shoes.
MICHELIN flat tread racing shoes.
MICHELIN Anti-Skid (not covered with leather) shoes
and above all
Get MICHELIN Tubes Para Rubber.

Don't be deceived and allow a slick salesman to tell you their imitation is just as good.

Write us or call.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29th STREET
NEW YORK

E. D. WINANS, Gen'l Mgr. Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

Digitized by Google

Rating Automobiles in Terms of Horsepower

of the engine is not a satisfactory method. The term "horsepower" really means nothing. The only correct comparison is one of Ability. **The Ability of a car is measured by the amount-of-power delivered-to-the-wheels-per-100-pounds weight-of-car.**

¶When people ask us the "horsepower" of the Stevens-Duryea, we hesitate to tell them that it is 20, for the bare statement does the car a great injustice. The complete answer is that the actual weight of the Stevens-Duryea is 1650 pounds (and not a pound more)—that the engine is 3⅞ x 4½ and develops 20 H. P. at 1,200 R. P. M.—that the mechanism is so efficient tha we only lose 10 per cent of this power before delivering it to the wheels whereas the best of other cars lose at least 30 per cent, and some nearer 50 per cent.

¶We then tell them that allowing a loss of 10 per cent leaves us 18 horsepower delivered to the wheels. Dividing 1650 by 18 gives 92—that is to say, the Stevens-Duryea gets one horsepower delivered to the rear wheels for each 92 pounds weight of the car. The best that other automobiles can show is 125 to 200 pounds per horsepower.

¶The Stevens-Duryea owes its Ability to a new system of design—patented and known as the Unit Power Plant mounted on the car on Three Points.

¶Our booklet explains all.

J. STEVENS ARMS & TOOL CO.

705 Main Street Chicopee Falls, Mass.

Members Association Licensed Automobile Manufacturers

Digitized by Google

POPE Toledo AUTOMOBILES

The NEW Type XII, 35

POPE-

PRICE, $3,500

Some advance and interesting data on the LATEST and GREATEST achievement of the WORLD'S LARGEST AUTOM PLANT.

MORE POWER, MORE SPEED, MORE ROOM, MORE STLYE, MORE STRENGTH—LESS WEIGHT.

Every one in the trade **the world over** is now familiar with the unparalleled and unapproached record of the justly renowne **Toledo.** A few months ago we could not ourselves see that it was possible to produce a better car than that with which we ha **every notable speed, endurance and hill climbing contest.** But our wide experience, new methods, new and improved machinery quantities, and **above all** the **highly successful** culmination of experiments in **specially treated steels** which have been in progress past four years, have enabled us to produce in Type XII, a **car that is a long step in advance** of our fondest wishes or expectations

Motor Four Individual, Twin Head, Cylinders, 4-cycle Copper Jacketed, developing **under brake test** 43 to 44 H. P. Water by the matchless Pope-Toledo Radiator. **All gears encased.**

In this space it is impossible for us to go into any deep exposition of the many points to be considered in producing the efficiency for the least weight in gas engine design. What **has been** accomplished in the Pope-Toledo in this respect might be stated in the claim that in this now highly efficient motor **the very remarkable result** has been attained of **SECURING ONE H. P. EVERY TEN AND EIGHT-TENTHS POUNDS OF WEIGHT,** and this, too, **without** in any sense **sacrificing** the **strength** or parts. This proportion of weight to horsepower has not been achieved by any mere laboratory test, by running the engine impractical speed, but under the ordinary conditions which prevail.

Ignition Jump Spark, Coils and Batteries. Provision made for Magneto. Control is simple, flexible and positive. The car driven **on high speed behind a team walking** or up to its maximum speed, **simply by the use of throttle and** both located on the Steering Wheel.

Control The **Pope-Toledo** Engine has been developed to such a point of efficiency that we are now able to run it from 200 to 1200 R. P. M., at which point it delivers its **greatest efficiency.** It is not only exceedingly **quiet under all con** but the use of a scientifically constructed Carbureter gives **great latitude of power** to the engine **at varying speeds.** Heretofo bureters have been generally adapted to deliver their **greatest efficiency** to the engine at a maximum speed. The Pope-Toledo Ca is developed to such a point of fineness, that it is **self-adjusting** to all conditions of speeds, so that **with the Spark and Throttl** and always **on the high gear,** you can drive a Pope-Toledo **anywhere,** taking all ordinary hills without rushing them and without gears.

Transmission Transmission is of the Sliding Gear type, three speeds forward and reverse, being **absolutely direct** the high gear with **no idle gears** in mesh. Ball bearings at all important points. The Transmission XII is **one of our great forward steps,** mentioned above. The steel we use in this transmission, of **210,000 pounds tensile s** will play a most important part in the future development of the Pope-Toledo. True, it is very **expensive to make** and sti **expensive to work.** By its use we are enabled to produce not only the **lightest,** but the **strongest** and **most efficient transmission eve in any automobile.** This steel is of the finest quality, more expensive and harder to work than any used by any maker in While it is true that some of the European makers use some very fine steels, we do not hesitate to say that the steel herein ment **superior from every standpoint** which **we have proven** to our own satisfaction by **every known test** and **by actual experience** fro it in the cars themselves **under the most severe and arduous road conditions.**

Frame All steel Frame **of few parts,** tested to a safe load away above what is required. All steel, light, flexible and stro ing the car very **easy to ride in,** and **easy on both tires** and **engine.**

Double Direct Outside Chain Drive

At this stage of automobile development, but few arguments need be advanced to show that on of efficiency, which means **reduced friction, weight** and **durability,** the chain system of power trav **AS APPLIED TO LARGE AND POWERFUL TOURING CARS,** is a long way ahead of the Cardan **from every standpoint.** We give herewith a table of exhaustive tests conducted in France in the to determine this point.

It has been thoroughly demonstrated, and **engineers are agreed,** that bevel gears are not as efficiency as Spur Gears, and that Chain Drive shows **greater efficiency, longer life,** and **less loss of power** than either Spur or Be Recent French experiments on the efficiency of Bevel gears, Spur gears and pitch chains, as applied to motor cars, **prove beyond** that **the chain drive is decidedly superior.** The results of these experiments are as follows:

	New	Worn
Roller Chain, Lubricated and exposed to dust	94%	92%
Bevel Gear, Steel on Steel, Running in Oil Bath	88%	82%
Spur Gear, Steel on Steel, Running in Oil Bath	92%	90%
Spur Gearing, Leather Pinion, Cast Iron Wheel	88%	80%
Spur Gearing, Steel Pinion and Fiber Wheel	88%	80%
Spur Gearing, Steel on Steel, greased and exposed to dust	90%	80%

Digitized by Google

I. P., "Quiet-Mile-a-Minute"

OLEDO

POPE Toledo AUTOMOBILES

LLY EQUIPPED

Chain drive is **decidedly** more **flexible** and **efficient**, requires **less care**, and on account of its flexibility, the motor and transmission and chassis are **not subjected to violent shock.** The matter of repair and replacement is **infinitesimal** as compared with bevel gears. You can tow a car with a broken chain, but you cannot do so with a broken bevel gear; and the older and more worn the gear the more power it consumes. Isn't it significant that in the elimination trials for the Gordon-Bennett Race, in which out of 70 or 80 cars the best three from each country were to qualify, that notwithstanding **over 50% of the entries were shaft driven,** out of the entire lot **only one shaft-driven car was able to qualify.** In the race **this car was not able to even make a showing** against all the chain-driven cars.

Brakes The Pope-Toledo system of Brakes is incomparable. Both foot and emergency brake act on the hubs of rear wheels, which are very efficient and easily adjusted to wear.

Gasoline Capacity 17 gallons, sufficient for 270 miles—from ⅛ to ½ more mileage for the same quantity of gasoline **than any car in the world.** Gravity feed to Carbureter.

Axles The Axles on Type XII are of the I Beam Type, FORGED IN OUR OWN PLANT of the best steel obtainable, being tested to **110,000 pounds tensile strength.**

Wheel Base 104 in.—Standard tread, 54 in.

Wheels 34 x 4, front and rear. We make all of our wheels here in our own plant. **All wheels spoked and assembled by hand.** Ball bearings of large dimensions.

Body Design Entirely new and original, along beautiful lines distinguished and distinct. Double side entrance. Very large and roomy tonneau, **especially easy of access.**

Front Seat and Tonneau **Of Mirror Finished Steel,** large and comfortable front seat divided. Deep and heavy upholstering.

Hood and Guards Improved Hood, opening from either side; Guards oval shaped, **made of aluminum,** following curve of wheels. Front guards large and flaring.

Tires We shall adopt for regular equipment **the best tire on the market,** determined by observation and our wide range of experience. Rims also of standard sizes, admitting the use of any Foreign or Domestic tire.

Equipment Full set of lamps, horn, tools, floor mats, tire pump and jack. A very complete outfit **of the highest quality.**

Proportion of Horsepower to Weight Not further back than a year ago it was considered good practice to have 100 pounds of car weight to one horsepower. How much has been accomplished not only **without the sacrifice of strength,** but by **actually increasing strength and durability,** can be best understood by stating that the new model Pope-Toledo has **ONE H. P. FOR EVERY 54 POUNDS OF WEIGHT.** It seems unnecessary to produce any arguments as to what this means. Certain it is that one of the chief points must be in durability not only to tires (which of course is a most important factor) but also to **all moving and wearing parts.** Experience and deep study of the entire subject of automobile building have demonstrated that to attempt to make a car strong by merely increasing the size and consequently the weight of the parts, not only **does not constitute strength** but is actually **a source of weakness,** for the larger and heavier car is sure to contain within its weight **the germs of its own destruction.** We have aimed therefore to keep **the horsepower up** and **the weight down** without for a moment losing sight of the importance of strength and safety.

Weight Distribution With the weight more evenly distributed in this new model than ever before, it must become evident to any one posted in the art that a great deal has been accomplished not only for the **durability of the machine** but **for the tires** themselves. The even distribution of weight and strength, aside from motor design, has probably received more careful study from us this year than ever before, and has only been possible through the wide knowledge we have gained from the thousands of our cars in use and from whose performance we have been able to apply the proper result in the increase of power and reduction of weight, with increased durability and strength.

We also build Landaulettes, Limousines, and a Gentleman's Roadster of 20 H. P., four cylinders. Special cars built to order of 20, 30, 35, 30 and 60 H. P. Further details given upon request.

25 H. P. DOUBLE SIDE ENTRANCE - -	$2,800
35 H. P. FRONT ENTRANCE - - - -	3,200
40 H. P. DOUBLE SIDE ENTRANCE - -	3,500
60 H. P. - - - - - - - - - -	6,000

And upwards according to specifications.

Pope Motor Car Co.

TOLEDO, OHIO

Digitized by Google

SOLARS
SHOW THE WAY

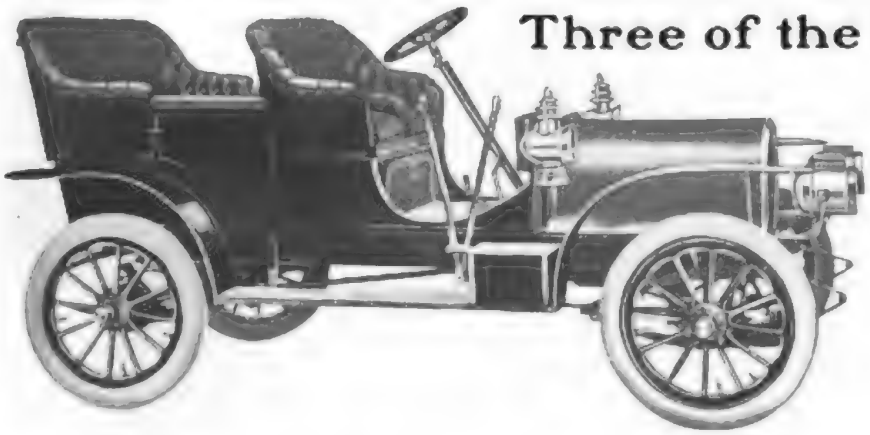
Don't fail to see the

1906 MODEL
of
Solar Motor Lamps and Generators

Our Parabolens Projector is the most powerful and steady light producer made, and is the only one manufactured with optically correct focus of lens, light and reflectors.
We absolutely guarantee these lights perfect.

BADGER BRASS MFG. CO.
KENOSHA : : : : : WISCONSIN

Digitized by Google



Three of the 1906 Models

Type G

The Big-Little Car

5-passenger Touring Car; weight, 1,300 pounds; 35 miles an hour.

$1,800

FRANKLIN

Type G, the new Big-little, Shaft-drive, Three-speed, Four-cylinder, Air-cooled, Side-door car carries 4 or 5 people over American roads more miles in a day or a year—and safer, easier and cheaper than any other car but a *Franklin*.

Small in weight, bulk and operating cost. Big in capacity and performance. A 12 "Franklin-power" engine which delivers up more actual "go" than the average car of 20 horse-power rating. Construction, material, springs and air-cooling that make all the power available on all roads all the year—summer and winter.

Costing 50 per cent more per pound to build than any other make of car and yielding 100 per cent more comfort, safety and enjoyment.

Type D. High-power Touring Car

This is another 1906 model, 20 "Franklin-power" car. It is the strongest car of its weight, and the lightest for its power. No car is more luxuriously comfortable, nor speedier on American roads.

Type E. 12 "Franklin-power" Gentleman's Roadster

As a business runabout; a superintendent's car; for a doctor or other professional man, or a suburbanite; for 2-passenger touring; or as a speedy roadster for the owner of a big touring car, there is nothing to compare with it.

It is an all-the-year-round car. No cold can freeze it. With air-cooling there's nothing to freeze. It needs no warm barn in winter, but stands always as ready as a saddled war horse, travels through snow like a plow; and when topped is perfectly comfortable in any weather.

It is the ablest, speediest, handsomest car of its type.

All three cars show a few detail improvements over our former models: Brake and clutch levers put forward—so that the driver gets in and out easily. Force-feed, wire-belt oiler on the dash. Ball-bearings on rear axle and transmission. And more effective brakes.

But not a single change or departure from the time-tried and victorious principles which make *Franklins* the coming standard American type.

"The Motor Car of the Future"

Send for book which describes all our 1906 models.

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

CHRISTMAS DIAMONDS ON CREDIT

THE LOFTIS SYSTEM AT CHRISTMAS TIME

is a great and timely convenience to thousands. It enables persons in all circumstances to make beautiful and appropriate **Christmas Gifts** with a very small initial cash outlay.

Everyone at Christmas time is anxious to give to their loved ones handsome Christmas Presents but it is not always convenient. The **Loftis System** of Credit, **means convenience.** Diamonds, Watches and Handsome Jewelry of all kinds for Christmas Presents on convenient terms.

You Are Welcome to Credit whether you are a moderate salaried employee or a wealthy employer. The **Loftis System** makes any honest person's credit good by adjusting terms to meet their earnings or income. Do not think that you must give a cheap, ordinary present because you can only spare a few Dollars just now. With five or ten Dollars for a first payment you can give a Wife, Sweetheart or Mother a beautiful Diamond which will last forever, enhance in value and continually bring pleasant thoughts of the giver's generosity.

Love is the Real Santa Claus. It is love which brings the joys of a Christmas remembrance and a Diamond is the most appropriate of all gifts for a wife, sweetheart, sister or mother because it is the true token of love. **It is the gift of gifts. Write today for our Big Handsome Christmas Catalogue.**

Our Christmas Catalogue for this year will be the largest and most complete we have ever issued. **Write for a copy today** and glance through the wealth of Gems, Fine Watches and miscellaneous Jewelry illustrated on its many pages. Beautiful Xmas presents for all. Diamond Rings, Brooches and Pins for Wife, Sweetheart, Sister or Mother. Diamond Studs, Scarf Pins, Fine Watches, Charms, etc. for Husband, Father, Lover or Brother

At your leisure in the privacy of your home you can select the Diamond, Watch or piece of Jewelry you prefer. Write us and we will send you any article you may select subject to examination and approval. Examine it thoroughly. You are perfectly free to purchase or not just as you please. We pay all charges. We take all risks. We deliver goods anywhere in the United States.

We invite you to open an account with us, become acquainted with the famous **Loftis System.** Remember it means convenience. Every transaction is on honor, prompt and satisfactory, one fifth the price to be paid on delivery. You retain the article, sending balance in eight equal monthly amounts direct to us.

Cash Buyers are welcome too, and we have an equally attractive offer for them, as follows. Pay cash for any Diamond, and we will give you a written agreement to take it back at any time within one year, and give you spot cash for all you paid—less ten per cent. You might for instance, wear a fifty dollar Diamond for a year, then send it back to us and get forty-five dollars, making the cost of wearing the Diamond for the entire year, less than ten cents weekly. No other house makes this offer. **Write today for Christmas Catalogue.**

Diamonds As An Investment are unexcelled. They are increasing in value every year. The Chicago Journal says in an editorial that they will advance twenty per cent in value during the coming twelve months. What other present is there so acceptable and so profitable? **Write today for Christmas Catalogue.**

The Gold Medal Highest Award which we won at the World's Fair, St. Louis.

Do Your Christmas Shopping Now. Do it conveniently and leisurely in the privacy of your own home. Don't wait until the Christmas rush is on. **Now** is the time to secure the choice selections and have ample time to inspect the goods. **Write Today for our Big Handsome Christmas Catalogue.**

A Test of Merit. In competition with the entire world at the St. Louis World's Fair last year our goods, prices, terms and methods won the **Gold Medal,** the highest award given to any exhibitor. No stronger endorsement of the **Loftis System** could be given. **Write Today for our Big Handsome Christmas Catalogue.**

Our Reliability. We refer you to your local bank, and they will consult their commercial guides Dun and Bradstreet and tell you that our responsibility and promptness are unquestioned. We give a signed guarantee as to the quality and value of every Diamond sold. Every Diamond we sell may be exchanged at full price at any time for a larger stone.

WRITE TODAY FOR OUR CHRISTMAS CATALOGUE.

LOFTIS BROS & CO. ESTD 1858

DIAMOND CUTTERS
Watchmakers, Jewelers
Dept. M560 92 to 98 State St.
CHICAGO, ILLINOIS, U.S.A.

SAVE A DIAMOND
DIAMONDS WIN HEARTS

Digitized by Google

There will be a scramble
for the

Thomas 1906 Flyer

When you see it
you'll know why

E. R. Thomas Motor Co.

Makers "Thomas Flyer" Automobiles

1202 Niagara Street Members A. L. A. M. BUFFALO, N. Y.

Motor Age Circulation

How Many of Our Esteemed Contemporaries Can Show a Letter as Strong as This?

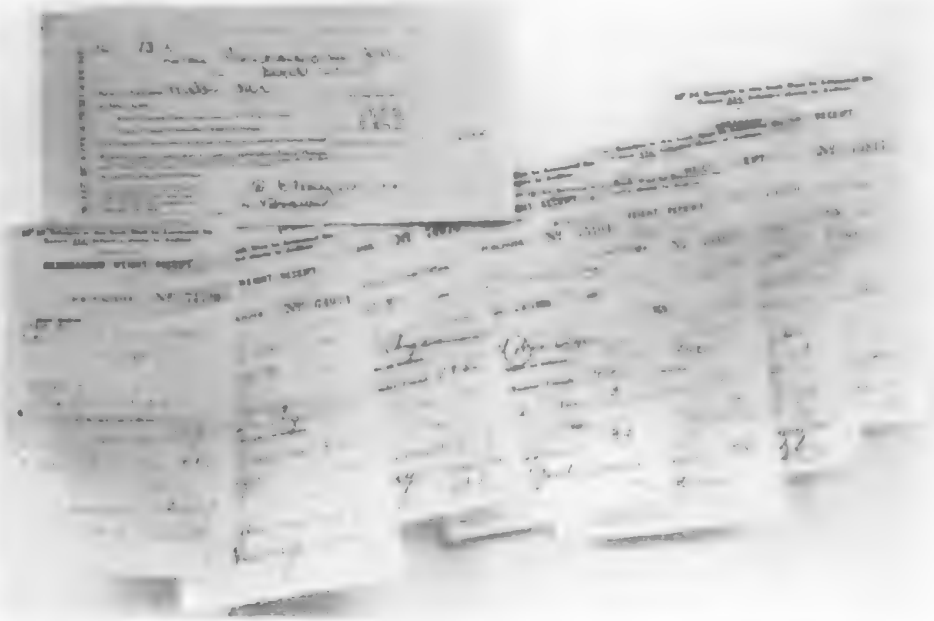
N. H. Van Sicklen, Manager MOTOR AGE, City.

DEAR MR. VAN SICKLEN:—We take no small amount of pleasure in enclosing herewith a little present for you in the shape of a contract for our next year's advertising.

It is a foregone and freely admitted conclusion that we will get our money's worth.

Very truly,

(Signed) MORGAN & WRIGHT,
Geo. C. Hubbs.



The above cut represents Post Office Receipts for 7,698 pounds net, of issue of September 21, 1905.
Each paper, including wrapper, weighed an average of 11 ounces.

7,698 pounds divided by 11 ounces equals	11,197	papers
We also sold, **non-returnable,** to Western News Co. and news stands direct	647	"
Mailed under stamps to foreign addresses	89	"
Retained for office sales and distribution	350	"
Total for week of September 21	12,283	"

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	"
August 31, page 38, statement for August 17	12,176	"
September 7, page 29, statement for August 24	12,271	"
September 14, page 42, statement for August 31	12,518	"
	62,393	"

Average weekly edition for August, 12,468

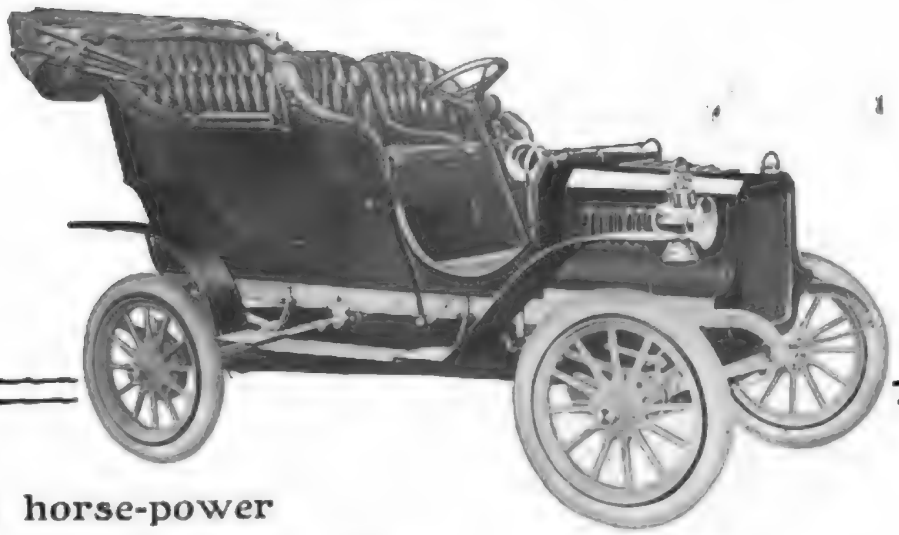
September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	"
Including above for September 21	12,283	"
Total for 3 issues in September	37,609	"

Average September issues, 12,536.

MOTOR AGE, N. H. Van Sicklen

Manage

Digitized by Google



The 30 horse-power

"REO Bird" at Syracuse

Made a mile in 58⅘ seconds
Broke the World's Record

for middle-weight cars.

Beat 2 cars of 40 horse-power

and demonstrated that REO cars are

Built for What Happens

Los Angeles-Santa Barbara: 2 First Prizes

In the Los Angeles Dealers' Association Run to Santa Barbara and return, out of 58 starters and 42 finishers a REO Touring Car made a perfect score; won its class and cup; and tied for first place with two other cars of higher power-rating and price — one of them, a 24 horse-power car, costing $2500.

REO 1906 Touring Car. 16 h. p., 1550 pounds, 90-inch wheel base, 5 passengers, side-door detachable tonneau Speed, 35 miles per hour. **$1250.**

REO 1906 Runabout, convertible into a 4-passenger car, 8 h. p., 900 pounds, 2 passengers, 25 miles per hour, **$650.** Or, with folding seat to carry 2 extra passengers facing forward, **$675.**

REO Motor Car Company

Sales Department, Lansing, Michigan

R. E. OLDS, President **R. M. OWEN, Sales Manager**

Agencies throughout the United States.

PUBLIC NOTICE

Of Just What May Be Expected of 1906

Diamond

Wrapped Tread Tires

Was given by the Vanderbilt Cup Trials. Eight cars were equipped with Diamond Tires, and not a finger was touched to any Diamond Tire throughout the race.

S. H. Dingley, driver of the Pope-Toledo, first to finish said, "They are the best tires in the world. I cannot say enough of the satisfaction I have had from them."

Joseph Tracy, who drove the Locomobile finishing second, said, "My Diamond Tires gave me absolutely no trouble."

Robert Jardine, driver of the Royal, third in the Trials, said, "I cannot ask for better tires under any conditions."

Frank Nutt, the Haynes-Apperson driver, taking fourth place, said, "From start to finish I had no occasion to give my tires a thought. Their record was perfect."

The Diamond Rubber Co.

Akron, Ohio

BRANCH OFFICES.

NEW YORK	78 Reade Street
NEW YORK	1717 Broadway
BOSTON	174 Columbus Avenue
BUFFALO	715 Main Street
PHILADELPHIA	304-306 N. Broad Street
CHICAGO	1241 Michigan Avenue
CHICAGO	167-169 Lake Street
DETROIT	158 Jefferson Avenue
ST. LOUIS	3966 Olive Street
SAN FRANCISCO	608 Mission Street
MINNEAPOLIS	611 First Avenue S.
DENVER	1735 Arapahoe Street
CLEVELAND	323 Huron Street
ATLANTA	94 North Pryor Street

REMOVAL NOTICE

Situated on the highest point of ground in the State

The St. Louis Motor Car Co., makers of those deservedly popular and reliable

ST. LOUIS

"RIGS THAT RUN"

has removed from St. Louis, Mo., to Peoria, Ill., where its factory facilities are seven times as great as in the old plant on Vandeventer Avenue, St. Louis

In St. Louis we had 16,000 sq. feet of floor space
In Peoria we have 105,050 " " "
YOU CAN FIGURE OUT THE DIFFERENCE YOURSELF

Agents who want to get in line for 1906 —and all others— address hereafter

ST. LOUIS MOTOR CAR CO.

PROSPECT HEIGHTS :: :: PEORIA, ILL.

Next year's output more than double this year's.
This will be good news to our agents.

HILL PRECISION OILERS

THE WINTON MOTOR CARRIAGE CO.
MANUFACTURERS OF WINTON MOTOR CARS
CLEVELAND, OHIO, U. S. A.

Sept. 14, 1905.

The Steel Ball Company,
840 Austin Avenue,
Chicago, Ill.

Gentlemen:

In reply to your favor of the 12th inst., would say that Mr. Alexander Winton has always recognized lubrication as one of the most important problems to be solved by automobile builders.

It is safe to assume that the Winton Motor Carriage Company has devoted more thought and experimenting to this feature than any other automobile manufacturing company in the country.

For more than a year the Hill Precision Oiler has been subjected by Mr. Winton to the most exhaustive tests, both in our experimental department and also in exceedingly severe and prolonged road work. The most satisfactory results have been obtained, and as a result, believing it to be the most perfectly developed lubricating device yet produced, Winton cars will be equipped during the coming season with the Hill Precision Oiler.

Yours very truly,

THE WINTON MOTOR CARRIAGE CO.
Chas. D. Adams
General Sales Manager.

THE STEEL BALL COMPANY

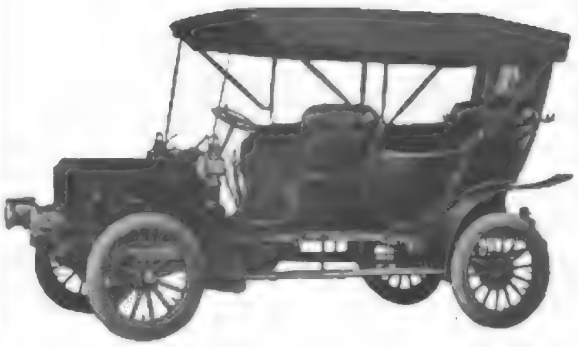
No. 837 Austin Avenue

CHICAGO, U. S. A.

The Incomparable

WHITE

The Car for Service



The splendid reputation of the White steam car is based on a record of five years of successful performance in all reliability and endurance contests, and of unequaled service in the hands of a host of private owners.

The new Model "F" White has met with the enthusiastic praise of all discriminating motorists. The new features include:

Graceful side-entrance body,
Long wheel-base,
Improved burner, giving added power,
Compensating brakes.

In order to appreciate its luxurious appearance, and its unique smooth-running qualities, you should arrange for a demonstration. Write to us and we will put you in touch with our nearest agent.

WHITE Sewing Machine COMPANY

Cleveland, Ohio

Digitized by Google

S. H. Boren Automobile Company

State Agents

FRANKLIN MOTOR CAR

369-371 Commerce St.

DALLAS, TEXAS, Sept. 6, 1905.

Continental Caoutchouc Co., 43 Warren St., New York.

Gentlemen: The writer has just returned from Buffalo, N. Y., where he finished a very good transcontinental run. We started from Dallas with a set of your tires which had been in constant use for five months, but these tires carried us through to Buffalo without a single puncture, or without requiring repumping. However, notwithstanding the fact that our route carried us through the roughest part of the Indian Territory and Missouri, we were out to make time, and we spared neither the car nor the tires, and consider that the tires performed in a most remarkable manner.

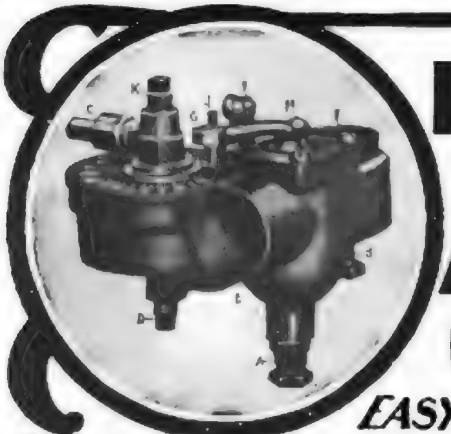
On our arrival at St. Louis we were informed by your agent that he had no tires in stock which would fit our car. We hesitated about going on with the tires in the condition they were, but decided to see just how much wear they would stand, and so did not renew any of them, although we had two extra tires in our hamper. We started from St. Louis running on the fabric, and the tires carried us to Buffalo without any trouble whatever, seeming to be in as good condition when we arrived at Buffalo as they were when we left St. Louis.

We have had the car shipped back to Dallas, and upon its arrival we will send the tires to you for inspection.

The writer has driven automobiles for a long time, and has had lots of experience with different makes of tires, but this trip to Buffalo was an eye-opener, and the writer must confess that he does not believe there is a tire on the market that could have duplicated the Continental performances on this trip. We were primed for all kinds of trouble when we left Dallas, and carried extras in the way of casings and tubes and a variety of repair outfits, for which we expected to find almost daily use. Perhaps you can realize how remarkable it was to go through this long trip without having even to use the pump on any of the tires.

Assuring you of our appreciation of your skill in building tires, and thanking you for past courtesies, we beg to remain,

Yours truly,
S. H. BOREN AUTO CO.,
Per S. H. Boren.



KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 29,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

SATISFACTION and the OLDSMOBILE

Have you ever talked with an Oldsmobile owner? If so, you must have been impressed with the satisfaction he expressed with his machine. Users of Oldsmobiles are our best advertisers. You naturally grow to like a machine that gives you thoroughly satisfactory service, and you are glad to tell your friends about it.

At one time and another we have had a good deal to say about the Oldsmobile for doctors' use. Here's what one doctor says:

> "My runabout has attracted considerable attention. *It always goes* and I am never delayed except occasionally on account of tires. I live on the top of a high hill, and cannot go anywhere without going up and down some long, steep hills. I am out in all kinds of weather. My car is practically as good as the day I bought it and it has had hard usage. *The expense of keeping it in order has been very small.*"

We have hundreds of letters along the same line and names and other information will gladly be sent on request. If you are interested in a machine for business or family use write us for further information. By calling on our nearest agent, you can easily arrange for a demonstration, which is the most convincing argument we can present. Send for Catalog 52.

OLDS MOTOR WORKS, LANSING, MICH., U. S. A.
Members A. L. A. M.

THE DAIMLER MANUFACTURING COMPANY
Announces that it is now ready to book orders for the

1906 American Mercedes Automobile, 40-45 h. p.

THE ONLY AUTHORIZED COPY OF THE

German Mercedes

Our sole ownership of all patents, designs and shop drawings of our parent company—*The DAIMLER MOTOREN GESSELSCHAFT of Unterturkheim near Canstatt, Germany*—for the United States and Canada enables us to make an exact copy, part for part, of the German machine. ∴ ∴ All the shop drawings of the 1906 GERMAN MERCEDES showing the latest changes and advances embodied in this celebrated car are now in our hands, awaiting your examination.

Price $7,500 **Save the Duty**

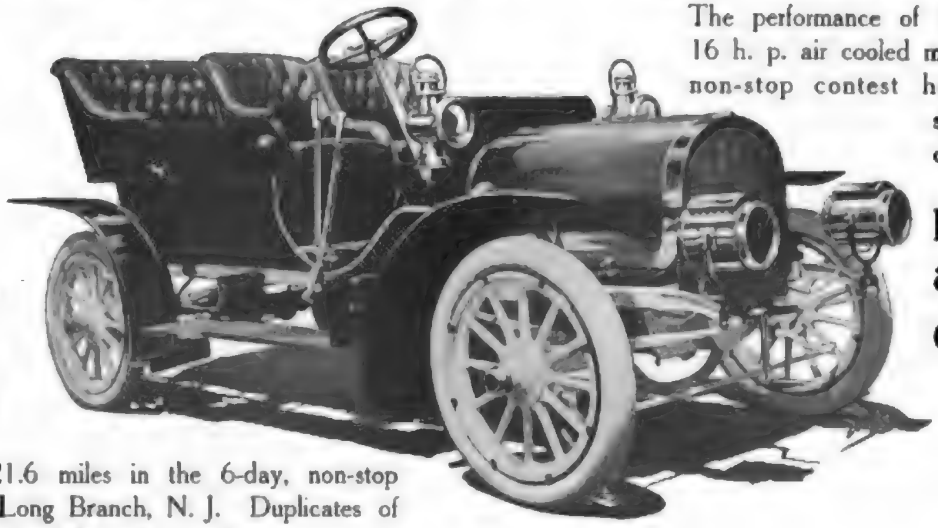
DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, *LONG ISLAND CITY, N. Y.*

New York City Garage—10 West 60th Street.

Digitized by Google

CORBIN CARS



The performance of the Corbin 16 h. p. air cooled motor in the non-stop contest has forever silenced the opponents of

practical air-cooling

A stock 16 h. p. Model D

made 2,321.6 miles in the 6-day, non-stop contest at Long Branch, N. J. Duplicates of this car can be delivered promptly.

The Corbin Motor Vehicle Corporation

NEW BRITAIN CONNECTICUT

NEW YORK, 4 West 38th Street BOSTON, 163 Columbus Avenue PHILADELPHIA, 629 North Broad Street

PENNSYLVANIA CLINCHER

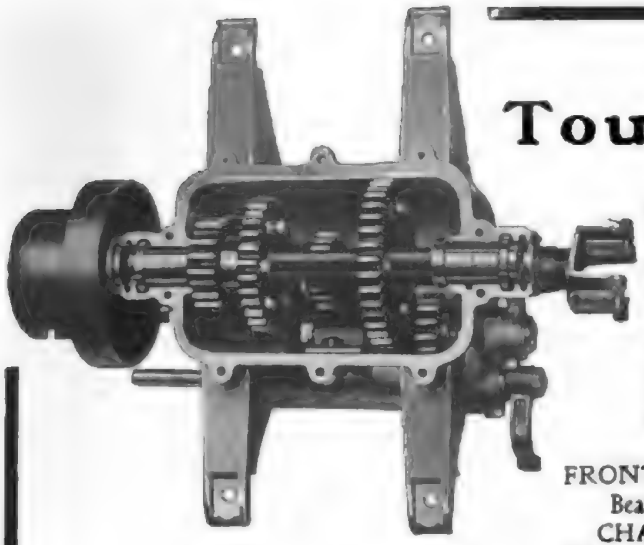
The value of a Tire is measured not by dollars, but by the Odometer.

The Tire which travels furthest without repairs is the most valuable to YOU.

The Tire which carries your Car softly over the road is the most valuable to your MOTOR.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google



Garford Touring Car Parts

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR

STEERING GEAR

CLUTCH

DISTANCE ROD AND BRACKET

PROPELLER SHAFT

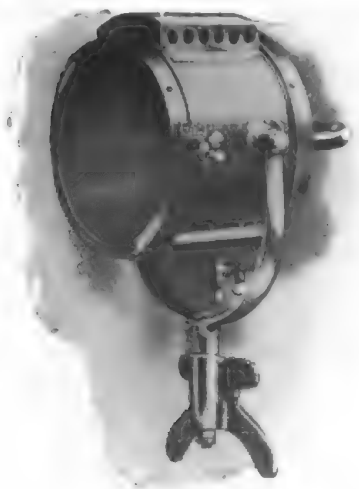
LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.
Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for Circular No. 12

THE GARFORD COMPANY, Elyria, Ohio

Sales Manager: HAYDEN EAMES, Cleveland, Ohio



SEARCHLIGHT SWINDLERS

The success of the Rushmore Lens Mirror Searchlight has been so complete that as a matter of course the lantern makers have been compelled to either try to imitate it or go out of business.

A number of them have conspired to keep us out of the automobile shows, have claimed that we do not make the celebrated Rushmore Lens Mirror and that they get their cheap flat lenses from the same place, and have resorted to every contemptible trick to deceive people into buying their trash.

Certain so-called jobbers have tried to push the sale of the imitation lights by issuing lists of what are insinuated to be our prices in comparison with their alleged cheap prices. The statement that we ask the prices quoted is a deliberate and malicious lie. The prices they offer are but a few cents lower than ours, while the fake lights they offer are by comparison not worth their weight as junk.

Some of the fake jobbers refuse to furnish the Rushmore light when requested to do so on the plea that we cannot make delivery. That statement is likewise a deliberate lie. They offer to refund your money if not as represented, but you had better hold on to your cash.

We do not ask any money in advance, but will send the Searchlight on ten days' free trial to anyone worthy of credit. The fake jobber can make but 25 per cent to 30 per cent on the Rushmore, while he clears 100 per cent to 200 per cent on the fake lights which he obtains on consignment. Do you wonder that he is willing to cheat you?

Our prices are the lowest for the quality and we ship from stock.

RUSHMORE DYNAMO WORKS, = Plainfield, N. J.

Digitized by Google

Glad to Get Back To GOODRICH TIRES

Mr. H. C. Baxter of Walpole, N. H., in a letter of ~~September~~ 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h. p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly,

H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE.

Regular Goodrich construction, but provided with the Bailey "WON'T SLIP" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company
Akron, Ohio

NEW YORK, 68-68 Reade St., and 1926 Broadway.
BUFFALO, 731 Main St.
SAN FRANCISCO, 302 Mission St.

CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 80 E. Congress St.
LONDON, E. C., 7 Snow Hill.

CLEVELAND, 420 Superior St.
PHILADELPHIA, 909 Arch St.
DENVER, 1444 Curtis St.

Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

Digitized by Google

Classification Distinctive... WHY?

The Lightest, the Strongest, Most Durable, Most Efficient, Best Finished. Attractive in Rich Finish and Design, Simply Manipulated.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

THE BAKER ELECTRIC

SEND FOR OUR BK CATALOG

THE BAKER MOTOR VEHICLE CO. Cleveland, Ohio

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

DON'T EXPERIMENT

Just Sell

THE FORD

MR. AGENT:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the Agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown*.

You know the general rush to the Ford exhibit at the shows and how they all ask *"What has Ford this year?,"* plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before—except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR CO., Member American Motor Car Manufacturers' Association, Chicago **Detroit, Mich.**

Canadian Trade supplied by The Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

Digitized by Google

G&J

MOTOR CAR TIRES

ARE

RESILIENT, SPEEDY
ECONOMICAL, SAFE

EASY TO HANDLE

Get our new Tire Manual **G&J TIRE CO.** INDIANAPOLIS

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER** We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit **any** make of motor. State make of your motor when ordering.

HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

"Everything for the Autoist but the Auto"

THE NEW BOOK IS IN PRESS
PLEASE SEND FOR IT

We are about to issue a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for fall and winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you, we would be pleased to mail a copy without charge directly it leaves the press.

Saks & Company Broadway, 33d to 34th Streets NEW YORK

The Official Announcer

of news pertaining to touring, racing, the commercial era and the industry in general. It will cost you $2 for 52 issues. It's worth it.

MOTOR AGE, 309 Michigan Avenue, Chicago

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

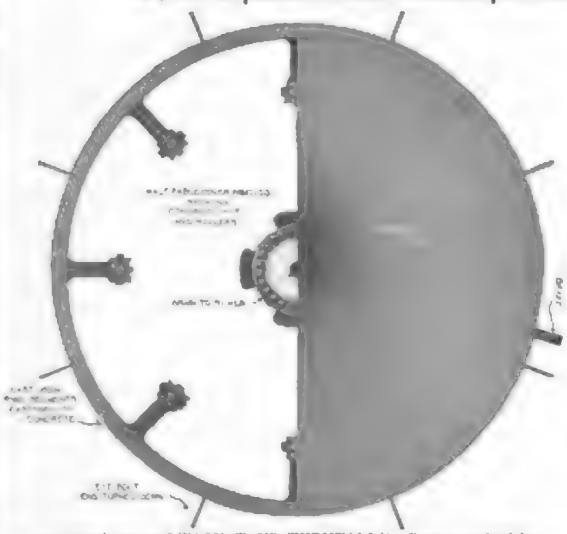
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

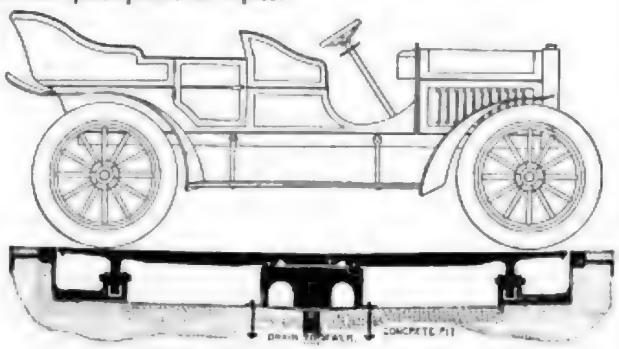
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

FIREPROOF

PORTABLE

AUTO

HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co

107 West Monroe St. :: Chicago, Ill.

Why Premier Cars

Appeal to All Classes

To the Professional Man—because of its simplicity.

To the Business Man—because of its readiness to go at all times

To the Repair Man—because of its perfect accessibility to working parts.

To All Men—because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point: for instance, one writes us: "The total cost of my running this season—5,000 recorded miles—is only a trifle over one cent per mile for the car, or 1-5 to ¼ cents per mile per passenger; total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

The Air Cooled Season never ends.

Side Entrance $1,500. Runabout $1,250

Our new [1906] Doctor's Special $1,425

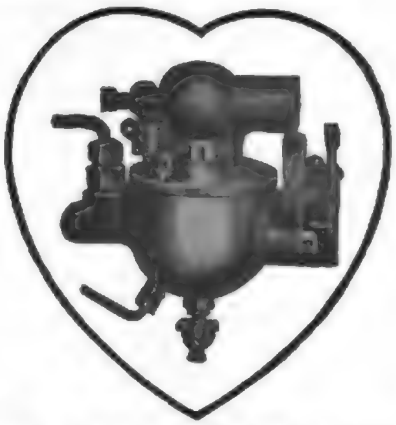
Light Truck $1,400

PREMIER MOTOR MFG. CO.

1001 George St., Indianapolis, Ind.

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google



THE HEART OF THE AUTOMOBILE

The Schebler Carbureter

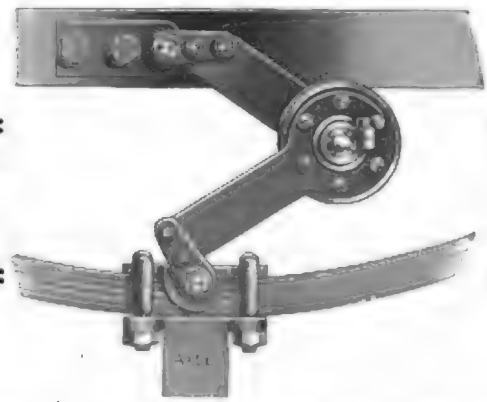
SIXTY-FIVE automobile and marine engine builders in the United States and Canada have adopted the Schebler. No other carbureter made in the world can show this record.

SCHEBLER SPECIAL for Cadillacs. - price, $20.00
OLDSMOBILE CARBURETER - - " 18.00
FORD, Two-cylinder. - - - - " 18.00

Standard sizes will fit all other automobiles. Agencies in all the principal cities of the world.

F. H. WHEELER
Manufacturer and Sales Agent
INDIANAPOLIS, IND.

E. J. Edmond, 44th St. & 6th Ave., N. Y.
E. B. Belcher, 26 Green St., Malden, Mass.
Jos. Brassard, Central Falls, Rhode Island.
Ellsworth Foundry & Machine Shop, Ellsworth, Me.
National Elec. Supply Co., Washington, D. C.
Smith Elec. Engineering Co., Watertown, N. Y.
The Wallace Bros. Co., Norfolk, Va.
North Philadelphia Auto Station, 3425 North Broad St., Philadelphia, Pa.
P. J. Dasey, 431 Wabash Ave., Chicago, Ill. Factory Representative.
Wilson & Co., Ottawa, Ontario, Canada.
Auto Supply Agency, 3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co., New Orleans, La.
Consolidated Supply Co., Denver, Colo.
Los Angeles Automobile Co., Los Angeles, Cal.
Hughson & Merton, 106 Front St., San Francisco, Cal.
McCulloch & Boswell, Winnipeg, Man.
Canada Cycle & Motor Co., Toronto Junction, Can.
Turnbull & Jones, Dunedin, New Zealand.
Geo. Neill & Co., 38 Fenchurch St., London, England.



Cars Under 1500 lbs. $40 (4 suspensions)

Cars Over 1500 lbs. $60 (4 suspensions)

"The first four cars in the International race for the Gordon-Bennett cup at Auvergne were ALL equipped with the Hartford Suspension, and only 24 minutes separated them at the finish. The fifth car was one hour behind the leader and was NOT equipped with the Hartford Suspension. This victory over the picked cars of every nation, and run over the most difficult course in the world, is only one more proof of the practical qualities of this wonderful invention."

HARTFORD SUSPENSION CO.

Edward V. Hartford, President 69 Vestry St., New York City

BRISCOE MFG CO.

OLDEST AND LARGEST MAKERS OF

AUTOMOBILE RADIATORS

DURING the past season we sol 12,945 radiators to 54 bona fid motor car manufacturers among whor are nearly all of those who have pr duced high-grade and successful cars.

Over 30,000 of our radiators are no cooling automobile engines.

Our standard honey comb radiator are of true cellular construction, allow ing cross circulation and accounting f their high-cooling efficiency per pour of weight of cooler.

The hit of the year 1905 in radiat design has been our flat tube constru tion with gang fins. We make speci designs for every class of car from t light runabout to the heaviest truck omnibus.

The finish on Briscoe fenders is une celled. 1906 styles on metal dashes, hoo and runabout boxes are prepared a we are daily booking contracts for ne season's business.

COOLERS FENDER

HOODS TANKS

By dealing with us you get the ben of our long experience and the pro tion of the many patents we own, co ing our methods of construction.

The Pierce Great Arrow car which the Glidden trophy was equipped wit Briscoe radiator. Of the twelve Ar ican water-cooled gasoline cars which ceived first certificates at the end of tour six of the radiators were mad our shops, four were made by the builders, and only two were made other radiator manufacturers. T facts are typical of our prestige.

Our two large plants are ready to care of our rapidly increasing busi We cannot only promise but make d eries.

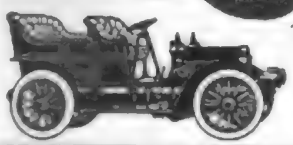
Write to our nearest office for mates and get in line for 1906.

BRISCOE MFG C

DETROIT, MICH. and NEWARK

Digitized by Google

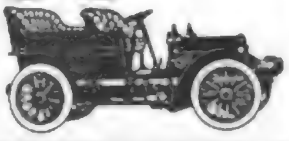
Locomobile



The Locomobile Company of America, Bridgeport, Conn.

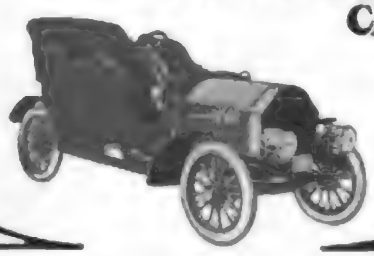
Member Association Licensed Automobile Manufacturers

NEW YORK, Broadway and 76th St. BOSTON, 15 Berkeley St.
PHILADELPHIA, 240 N. Broad St. CHICAGO, 1354 Michigan Ave.



GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the Best Materials Obtainable

THE SIMPLEST GASOLENE CAR IN THE WORLD

—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction"

40-45 Horse Power, $5,000

CORWIN MANUFACTURING COMPANY
PEABODY, MASS., U. S. A.

DANGER AHEAD!

BRIGHT AND STEADY
ALWAYS READY

Is the acetylene light that gets its supply of gas from the

PREST-O-LITE GAS TANK

Neither heat nor cold, rain or shine affects the steady supply of pure, cool gas. Enough to run two searchlights fifty hours.

Jan. 4, 1905.

Concentrated Acetylene Company,
Indianapolis, Ind.

Gentlemen:

It affords me pleasure to report the success I have enjoyed in the use of your Prest-O-Lite tank. This tank has been on my personal car for three months and has been called into nightly service, yet it has not been necessary thus far to recharge it. Its cleanliness and ever-readiness make it a valued possession, and I am confident that I shall not soon again want to bother with gas generators when I can secure your tank with the gas ready for instant use. With best wishes,

Sincerely yours,
(Signed) ALEXANDER WINTON.

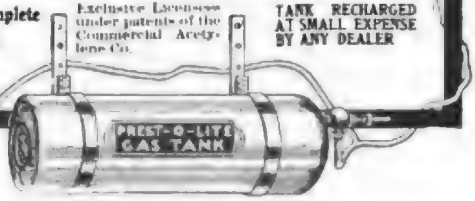
To be had of all dealers. Empty tank exchanged for full one by any dealer.

PREST-O-LITE COMPANY
INDIANAPOLIS
AGENTS IN ALL CITIES

Price Complete $35

Exclusive Licensees under patents of the Commercial Acetylene Co.

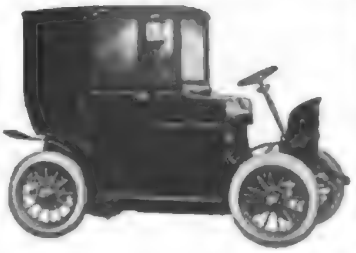
TANK RECHARGED AT SMALL EXPENSE BY ANY DEALER



Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers Hartford, Conn.

New York Branch: 134, 136, 138 West 29th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

Digitized by Google

THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1601 Broadway, New York City, N. Y.
Warner Instrument Co., 304 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

Latest European Novelties

RACING CAR No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc, which are mechanically operated with clock work and spring. Catalogue mailed on request.

No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

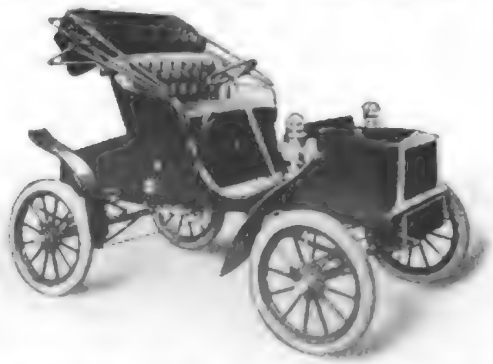
CHARLES E. MILLER

Manufacturer, Jobber,
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 38th St., New York 318-320 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

A TIMELY WORD TO DEALERS



THE GALE $500
Model A

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer Knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 . . It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.

BROWN-LIPE GEARS

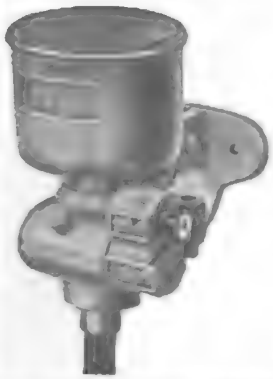
IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

PETERSON & DRAPER, 106 Lake St., Chicago, Ill. } Direct Factory Salesmen.
THOS. J. WETZEL, 11 Warren St., New York. }
CHAS. E. MILLER, 97 Reade St., New York. }
318-320 No. Broad St., Philadelphia. } Sales Agent Carrying Stock.
202-4 Columbus Ave., Boston. }
406 Erie St., Cleveland, O. }
POST & LESTER CO., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO

200 South Geddes Street **SYRACUSE, N. Y**

Digitized by Google



THE AUTO-METER

"BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy

The **Speed Dial**, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The **Trip Dial** records the distance traveled on a trip or for a day.
The **Season Dial** records the total distance covered in a season.
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1091 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

Pressed Steel Frames

AND STANDARD PARTS

Automobile Manufacturers using our pressed steel frames on their machines are always certain that they have the best of frames procurable in point of reliability. We have recently increased our capacity and are equipped to turn out our standard frames, or frames of special design, in quantities for early delivery. We have presses also for making heaving stampings and pressings of all descriptions and are prepared to do any work in this line. We also make a complete line of

Rear Axles, Front Axles, Clutches, Change-Gears, Propeller Shafts, Steering Columns, Hubs and Other Automobile Parts

A. O. SMITH COMPANY

MILWAUKEE, WISCONSIN

Hayden Eames, Sales Manager, American Trust Bldg. Cleveland, O.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN Runabouts
OLDS TOURING CARS
CADILLAC
FORD
THOMAS Models 17 and 13
GENERAL
YALE
AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

HAVE YOU SEEN THE NEW

KOKOMO

MECHANICALLY - ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,

KOKOMO, IND.

Digitized by Google

Mr. H. F. Hubbell, in his Adams-Farwell Car, in Forest Park, St. Louis

ADAMS-FARWELL

MR. HUBBELL WRITES AS FOLLOWS:

"With reference to the engine will say in the three and a half months that I have run it I have not had an accident, and have never been forced to send for assistance.

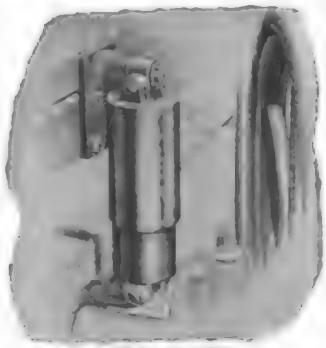
"My wife is able to go to our garage and take our car out at any time she cares to, and she experiences no difficulty in operating it, even in the streets where the electric cars and carriages are very numerous."

SIX MODELS THE "REVOLVING MOTOR" CAR SEND FOR CATALOG

THE ADAMS COMPANY, Dubuque, Iowa

CHICAGO BRANCH: 1536 MICHIGAN AVE.

GOODBYE



PATENT ALLOWED.
See illustrated description in Motor Age of August 3.

JOLTS JARS BUMPS AND SHOCKS
of every nature

NO Bumping Axles, Broken Springs, Disarranged Motor and Machinery, Telescoped Spines.

SAVES Tires, Springs, Motor and Transmission, Repairs, Oil, Gasoline, Perspiration.

THE KILGORE

Automobile Air Cushion

SPRING DEVICE

Permits the use of Flexible Springs on your car and a good steady speed over roads as they come. An investment paying 50% to 500% in cash and large dividends in comfort.

KILGORE AUTOMOBILE AIR CUSHION COMPANY

GENERAL SALES AGENTS UNITED STATES AND CANADA

S. F. HEATH, Manager 46 Columbus Avenue, Boston, Mass.

Agencies: NEW YORK, E. J. Edmond, 52 W. 43d Street.
BOSTON, W. R. Butterfield, 41 Mt. Vernon St., Somerville.
CHICAGO, Wm. R. Johnston, 1336 Michigan Blvd.
MINNEAPOLIS, Barclay Auto Car.

ELECTRIC

Broughams Landaulets
Victorias Station Wagons
Coaches Ambulances, etc.

Express Wagons, Delivery Wagons, Baggage Vans, etc.

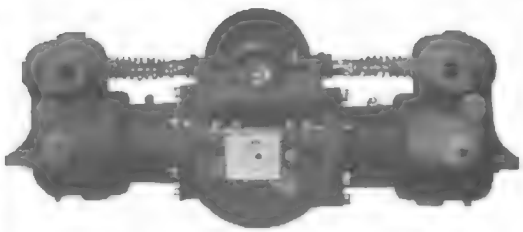
Brewers' Trucks, Dumping Trucks, Machinery Trucks, Hoisting Trucks, etc.

Over One Hundred Standard Designs, One to Six ton capacity

VEHICLE EQUIPMENT CO.

Sales Department, General Office and Works
LONG ISLAND CITY, NEW YORK

Largest Builders of Electric Vehicles in the World



"BEAVER MOTORS"

Maximum Power—Minimum Weight

All bearings and parts subject to strain of ample dimensions. Get particulars and prices for your 1906 cars

12-14 H. P. OPPOSED
16-18 " "
22-24 " VERTICAL

BEAVER MFG. CO., MILWAUKEE WISCONSIN

Digitized by Google

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the **two** cycle two cylinder Elmore engine. Understand—the **two** cycle two cylinder Elmore engine produces **two impulses every time the flywheel turns.** As you know, the two cylinder **four** cycle furnishes only **one** impulse every **fourth** time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

Northern

"Noiseless and Dustless"

7 h. p. Runabout	$ 650
18 h. p. Side Entrance Touring Car	1.700
Limousine	2.500

Investigate our claim for QUIETNESS—you will find that the Silent Northern surpasses in this respect. It is QUIETER than the finest electric.

Investigate our claim for EASY RIDING—four full elliptic springs and scientific distribution of weight which includes placing of all mechanism under the front hood, insure a freedom from vibration such as you can have no conception of until you ride in a Silent Northern.

There are other features embracing our THREE POINT MOTOR support and encased mechanism which reduce the cost of maintenance to the minimum. Send for our complete Catalogue 14 which explains in detail.

NORTHERN MFG. CO.
DETROIT, U. S. A.

Members Association Licensed Automobile Manufacturers.

Peter Fogarty, 142 W. 38th St., New York City Agent.

"20TH CENTURY SOAP"

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

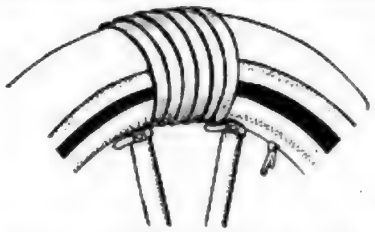
25 Pound Pail $1.15

60 Pound Tub $2.50

Or in Barrels

HOFFHEIMER SOAP CO.
CHICAGO

The Automobile Tire Emergency Strap



DOES for the Automobile tire what tape does for the bicycle tire. Made of special chrome leather absolutely unaffected by water. Is applied by buckling one end to a spoke, winding tightly around the partly inflated tire and buckling the other end. Will enable a person to run a hundred miles with a bursted, rim-worn or badly cut tire-shoe. Makes it safe to take long trips without an extra casing.

One size fits all tires

PRICE $1.50 EACH

For sale by dealers, or sent post paid on receipt of price

Leather Tire Goods Co. Makers
NEWTON UPPER FALLS, MASS.

Digitized by Google

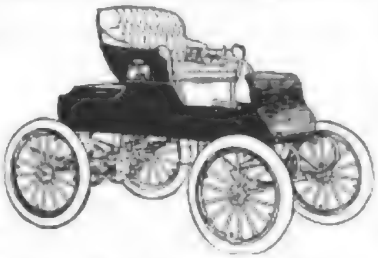
National Motor Cars

"WATCH FOR THE ROUND RADIATOR"

National Model C. 24-30 H. P. 4 cyl., 4½x5

A touring car decidedly in advance of the times.
A type of car that will be extensively copied in the near future.
Ample power and speed, perfect control.
All working parts simply arranged and *remarkably* accessible.

National Electric Runabout



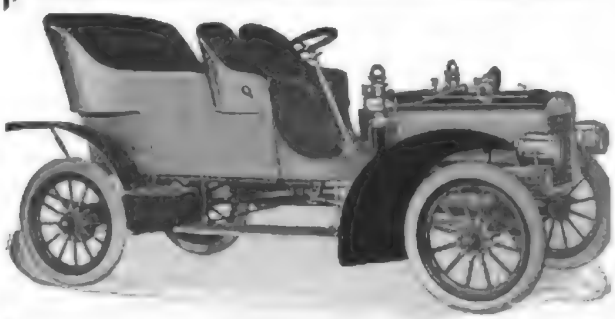
One of several handy little electric cars which are unsurpassed for convenience and comfort. Write for our catalogues.

NATIONAL MOTOR VEHICLE CO.

Members American Motor Car Manufacturers' Association, Chicago.

1006 E. Twenty-second Street INDIANAPOLIS, IND.

MOLINE



18-20 HORSE POWER

Model "B" - $1,600

Four cylinder vertical motor that develops more than the rated H. P. Pulls through heavy roads and up hills in a way that surprises the owners of higher priced cars.

Has all the good features of most $2,000 machines and costs $1,600

For the first time this season we can make immediate deliveries

We have only a few of them left and they will go quickly. Perhaps our proposition might interest you.

Model "D" Our stock of these substantial 12 H. P. Touring Runabouts is decidedly limited. The price we are making is clearing them out fast. If you want one, speak quick.

Moline Automobile Company

EAST MOLINE, ILLINOIS

WANTED

Manufacturers having just bought a large commercial motor vehicle works are extending operations and want

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

Also want suitable

PARTY TO GO ABROAD

Must become financially identified with the business.

Address

"COMMERCIAL"

CARE OF MOTOR AGE, CHICAGO

Automobile Lamp Manufacturers

This little Acetylene Lamp Burner has been the source of a great deal of annoyance. This list is published for the benefit of those who desire to avoid it.

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.
Badger Brass Mfg. Co. (Solar), Kenosha, Wis.
Commercial Acetylene Co., New York City, N. Y.
R. E. Dietz Co., New York City, N. Y.
A. H. Funke, New York City, N. Y.
Gray & Davis, Amesbury, Mass.
Manhattan Lamp Works, New York City, N. Y.
Motor Car Equipment Co., New York City, N. Y.
New York Coach & Auto Lamp Co., New York City, N. Y.
Rose Mfg. Co., Philadelphia, Pa.
Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

Digitized by Google

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

THE HAYNES 1906 four cylinder REGULAR STOCK TOURING CAR qualified for the Vanderbilt Cup Race in competition with a long list of the most powerful specially constructed racing cars ever built in America.

Compare the cylinder capacity of the engine in the HAYNES car (5 in. bore x 6 in. stroke) with that of all other entrants. Nutt had been around the course in this car only three times prior to the race and was the only contestant who had never before driven in a race. The only stop he made with the HAYNES car was necessitated by an oil can bouncing into the fly wheel and spilling oil on the master clutch, causing it to slip.

Just think what it means for a stock touring car to win honors from specially built monster racing cars. That is what THE HAYNES STOCK CAR did. IF YOU ORDER A HAYNES 1906 TOURING CAR YOU GET AN ABSOLUTE DUPLICATE OF THE CAR DRIVEN IN THIS CONTEST.

We are now booking orders and closing agencies for 1906 HAYNES CARS. Write us to-day.

HAYNES AUTOMOBILE COMPANY
(THE HAYNES-APPERSON CO.)
KOKOMO - - INDIANA
MEMBERS A. L. A. M.
NEW YORK CHICAGO

WE ARE JUST FINISHING

OUR LAST LOT OF.....

50 4-Cylinder Yales
28 h. p., 104 inch Wheel Base

We will be Able to Make Reasonably Prompt Deliveries

A SUPERB FINISH AND IRONED FOR CAPE OR CANOPY TOP

We want to sell these to agents who will be interested in our proposition for the coming season, and KNOW that this model will be a worthy INTRODUCTION.

THE KIRK MANUFACTURING CO.
TOLEDO, OHIO

Member Association Licensed Automobile Manufacturers.

THE
Kellogg Multiple Gear Pump...

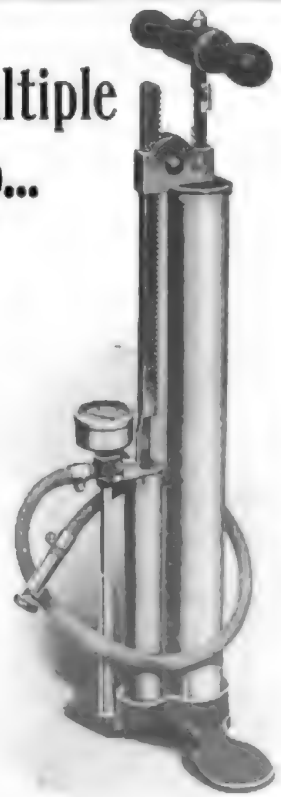
JOBBERS
DEALERS
USERS

This is the limit of perfection. ... 1906 Catalogue will soon be ready.

...Write...

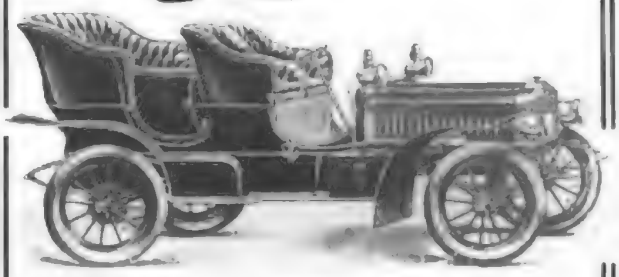
WRAY PUMP & REGISTER CO.
191-193 Mill St.
Rochester, N. Y.

Or Brandenburg Bros. & Alliger, 105 Reade St., New York City, 85 Lake St., Chicago, Ill.



Digitized by Google

THE LAMBERT



Model 7. 28-32 h. p., $2,000

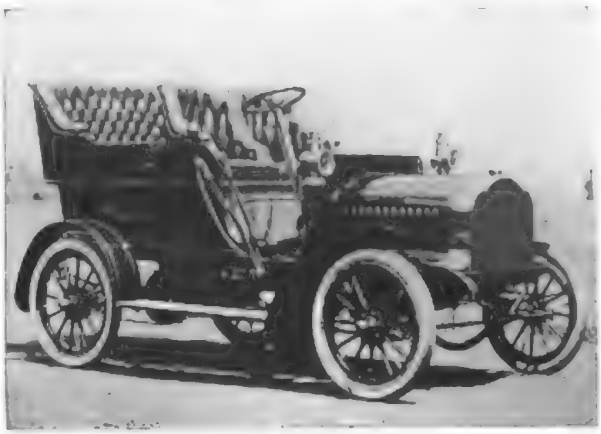
A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.
MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

Compound MOTOR CARS



Model Four, $1,400

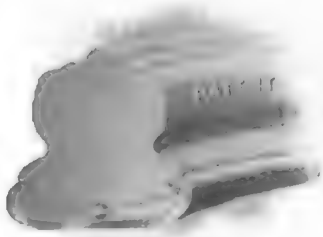
HALL BROTHERS

The E. H. V. Co., Middletown, Conn. NORWICH, CONN., Sept. 5, 1905.

Gentlemen:—The Compound that I purchased of you last Spring is giving excellent satisfaction. I have used it considerably cross country touring and find it both reliable and economical. I can cheerfully recommend the Compound to any one desiring a quiet, smooth running car.

Yours respectfully, F. B. HALL.

THE E. H. V. CO., MIDDLETOWN, CONNECTICUT



1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

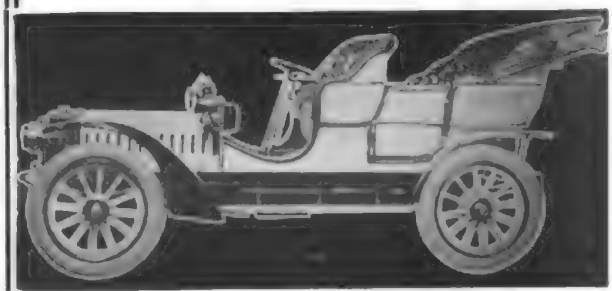
Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.
AKRON, OHIO

New York City, 1773 Broadway Chicago, 1206 Michigan Boulevard

AUSTIN

A LUXURIOUS CAR



THAT LOOKS THE PART

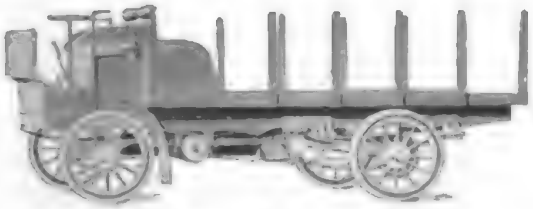
Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.
GRAND RAPIDS, :: MICHIGAN

Digitized by Google

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.

Among *the* Leaders *in* Eliminatin' Race

OUR regular stock model finishes third in Vanderbilt Cup Race trials. Just think what we are offering you this year. It is like this. You sit behind the wheel of a *Royal Tourist* with one hand on the throttle lever. Move the lever an inch or so and you have an ideal vehicle, under perfect control, for city use or country touring. Move the lever a little more and you have a motor car, fit to compete with the speed machines especially built for the *Vanderbilt Cup Race*. Please bear in mind the fact that the famous Royal that did so well in the Elimination race held Sept. 23 is the same as the one you buy from us in every particular except, of course, you get a luxurious and handsome body, instead of a couple of tin seats.

ROYAL

THE ROYAL MOTOR CAR CO. .:. Cleveland, Ohio

AGENTS

C. A. Dorr & Co., 58th and Broadway, New York — G. J. Dunham, 102 Columbus Ave., Boston
The McDuffee Automobile Co., 1449 Mich. Av., Chicago — G. W. Caplis, 424 So. Fifth Street, Minneapolis
Automobile Supply Co. Ltd., 24 Temperance St., Toronto — Motor Shop, 317 N. Broad St., Philadelphia
Westminster Automobile Co., 4396 Olive St., St. Louis.

DIETZ

THE **DIETZ** OIL LAMPS

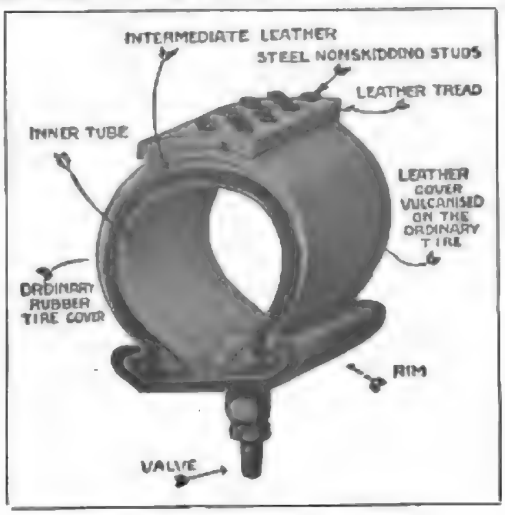
are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York

ESTABLISHED 1840

SAMSON LEATHER TIRE

NON-SKIDDING :: :: PUNCTURE PROOF



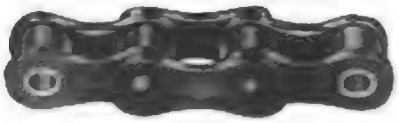
A. E. GALLIEN, Manager

UNITED STATES BRANCHES:

New York: 12 West 33d Street — Chicago: 1461 Michigan Boulevard
Boston: 20 Park Square — Philadelphia: 1120 Chestnut Street

Digitized by Google

Chain Drive Wins
Vanderbilt Cup Trials



"DIAMOND" CHAINS were on the winning car in the eliminating trials for the Vanderbilt cup. The second car to finish was also driven by "DIAMOND" CHAINS.

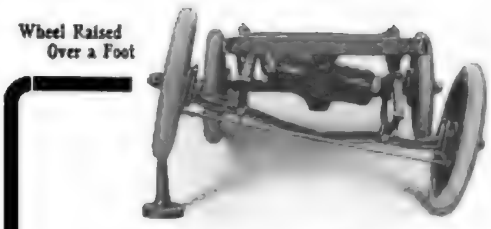
BOTH COVERED THE COURSE IN ABOUT 22 MINUTES LESS TIME THAN THE THIRD CAR, WHICH WAS GEAR DRIVEN

Judicious selection of materials and accuracy of manufacture account for the successful performance of "DIAMOND" CHAINS.

TRADE ◇ MARK.

When your old chain is worn out try a "DIAMOND." It fits any standard sprocket.

DIAMOND CHAIN MFG. COMPANY
INDIANAPOLIS, IND.



Real Comfort on Rough Roads

It isn't enough to say "this car goes anywhere" So does a log-wagon; that doesn't mean that you would want to ride on it.

THE MARMON
"A Mechanical Masterpiece"

Is the only car that is not built on the unyielding principles of a log-wagon. The flexibility of its running gear is such that, over the roughest roads, its mechanism is always in alignment, free from binding and twisting strains. It can be run at good speed over rough roads with a freedom from jar, jolt or vibration—a very luxury of motion—that is unknown in any other car, all due to an exclusive patented Marmon feature.

Double Three-Point Suspension

Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Eliminates the ruinous strain inevitable in the rigid suspension of all other cars. Means greater efficiency and less wear on all parts, tires included. Four cylinders air-cooled. A carefully constructed, high-grade proposition for those who want nothing but the best. :: :: :: :: :: WRITE FOR BOOKLET No. 1.

NORDYKE & MARMON COMPANY, Indianapolis, Ind.
(Established 1851) *Members American Motor Car Mnfs. Assn., Chicago*

Standard Roller Bearing Company

Steel
Brass
Bronze
BALLS

Use our "A" Grade Steel Balls for ordinary bearings
"B" Grade for bicycles, etc.
"Hardware" Steel Balls for Sash Pulleys, etc.

USE THE BEST BALL MADE

"High Duty" Steel Balls

For High Speed and Heavy Service

Our Capacity is 500,000,000 Balls per Annum
First Prize for Accuracy, Strength and Durability, at Paris and Pan-American Expositions.

Standard Roller Bearing Company
PHILADELPHIA, PA.

Largest Ball Makers in the World. Also Manufacturers of Ball Bearings, Automobile Bearings, etc.

Send for complete Catalogue and Ball Price List.

PATENTS PENDING IN ALL COUNTRIES

The Little Wonder Carburetor Manufacturing Company

347 Franklin Street
BUFFALO, N. Y.

This carburetor will fit all classes of motors, from one-horse power up, and is especially adapted to automobile and marine engines.

The "Little Wonder" Carburetor, used in connection with our Hot Air Generator on the exhaust pipe, is guaranteed to increase your horsepower from ten to twenty per cent, economizing in fuel consumption, giving a perfect mixture in quantity and quality at all engine speeds; it is 100 per cent safer than the float-feed carburetor, and is positively guaranteed not to ignite or explode, and is absolutely impervious to flame or back-firing.

The "Little Wonder" Carburetor is hot-air jacketed, as enclosed cut shows, thereby increasing the vaporization of the gasoline, and giving a hot gas mixture under all atmospheric conditions. Our Carburetor will not leak, freeze, flood or cause any trouble, as is the case with other carburetors now on the market. Our object in placing this carburetor on the market has been to supply the increasing demand for an entirely automatic, simple, reliable and absolutely fireproof form of carbureting device. That we have succeeded in our efforts has been thoroughly proved by the appreciation of the many users and advocates of the pump-feed type of carburetor. In the "Little Wonder" Carburetor the air as well as the gasoline can be regulated at will by the operator. Our Carburetor is so simple that anyone of ordinary mechanical ability may perfectly adjust and apply same to motor.

Prices quoted upon application.

Generator, listed $10.00 **Carburetor, listed $15.00**

Ask for quotation and give diameter of exhaust pipe, 1½" up.
We build Gas Engines and Steam Engines; also Racing Machines for roadway and waterway, all combined in one. See cuts.
Ask for prices on our Wheel Crank for pulling off and on wheels.

Respectfully yours,

J. C. W. FERRAR, General Manager and Owner.

Digitized by Google

U. S. Patents Pending.
Patented in England, France and Belgium.

THE WHITLOCK COOLER

Tested and Adopted by

90 Per Cent

of the Leading Manufacturers of

HIGH GRADE CARS FOR 1903-1904-1905

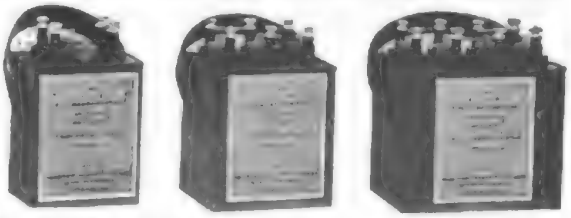
Any Design or Style of Cooler Made to Order

THE WHITLOCK COIL PIPE CO.

Hartford - Conn.

THE "AMERICAN"

STORAGE BATTERY FOR IGNITION—MONITOR TYPE—



VOLTAGE—4, 6 AND 8. CAPACITY—20 AMPERE—HOURS. PRICES—$6.00, $9.00, $12.00
OTHER STYLES—$1.25 to $22.00.

CATALOGUES ON REQUEST. ESTABLISHED 1897.

AMERICAN BATTERY COMPANY
165 SOUTH CLINTON ST., CHICAGO, ILL.

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.

CHICAGO

Veeder

ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

GILSEY HOUSE

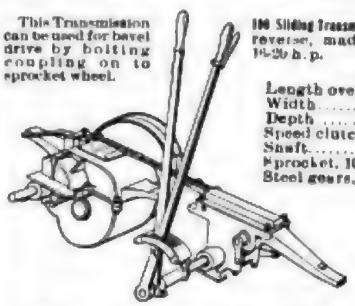
UP-TOWN

Corner 29th and Broadway
New York

Rates $1.50 up — Cafe a la carte

GEORGE W. MOORE, Manager

This Transmission can be used for bevel drive by bolting coupling on to sprocket wheel.



100 Sliding Transmission, 3 speeds forward and reverse, made for 2 cyl. Cleveland car, 18-20 h. p.

DIMENSIONS

Length over end supports	24 inches
Width	18 "
Depth	11 "
Speed clutch	10⅜ "
Shaft	1⅝ "
Sprocket, 10 tooth	1¼x⅜ "
Steel gears, hardened	8 pitch

PRICE
$60.00
NET

The Automobile Supply Company
1339 Michigan Blvd., Chicago, Ill.

STOP THAT NOISE!

NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

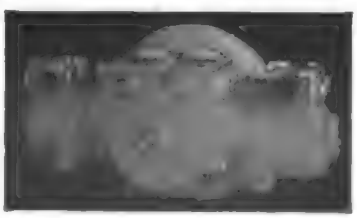
LET US HEAR FROM YOU.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, NEW YORK

---

25 H. P. Vertical — 16 H. P. Opposed

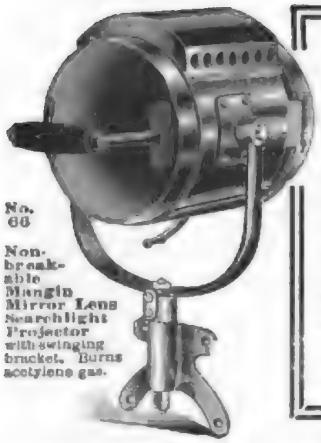
High-Class Automobile Motors



The A. Streit Machine Co.

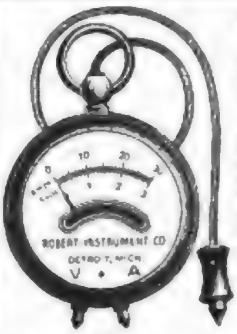
CINCINNATI OHIO

Digitized by Google



No. 66
Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

You can always tell
The Neverout
Mirror Lens Searchlight
by the rare brilliance of the light it throws ahead.
The New *Neverout*
patent safety gas producer
furnishes the purest, driest and best gas, and is always ready for use, no matter how long the carbide has been standing unused.
Write for free illustrated catalogue
ROSE MFG. CO., 912 Arch St., Philadelphia

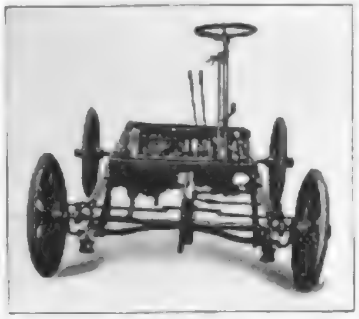


BE SURE YOU ARE RIGHT
THEN GO AHEAD.
Before starting on a trip test your batteries with the ROBERT
VOLT-AMMETER
There's no possible need for worry or anxiety after the "Robert" says your batteries are O. K. It is invaluable for testing batteries. Every automobilist or engine user should use the Robert Volt-Ammeter to ascertain the EXACT condition of their batteries.
It responds accurately and instantaneously. It is convenient pocket size. Contains no internal mechanism, and will last indefinitely.
Guaranteed. No Inconvenience. No Disappointment
You know just how your batteries will work when you use the Robert. Price, including Leather Case, $15.00. (0-3 volts, 0-30 amperes) (0-6 volts, 0-30 amperes) 0-6 volts, 12 amperes.
Write for circular and discounts.
ROBERT INSTRUMENT CO.
65 Shelby Street. DETROIT, MICH.

Double Service
Owners of automobiles or launches who use the Apple Automatic Sparker have no trouble with weak storage batteries or ignition failure at any time. With the APPLE AUTOMATIC SPARKER you can keep your storage batteries always charged and ready to give a strong steady spark at all times. It is far ahead of any European Dynamo. Besides this, the APPLE AUTOMATIC SPARKER gives double service by giving ample power for three electric lights whether the engine is running or standing still.
We are specialists in Ignition Apparatus. If you have ignition troubles of any sort, write us to-day.
The Dayton Electrical Mfg. Co.
75 Beaver Bldg. DAYTON, OHIO

MUD
FORGET IT AND USE
WEED'S TIRE GRIPS
POSITIVLY STOPS SLIPPING OR SKIDDIN
THEY MAKE BAD ROADS GO
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST.
NEW YORK CITY.

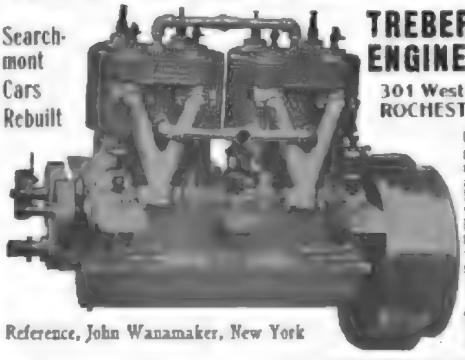
RADIATOR MONOGRAMS
ANY SIZE
ANY STYLE
ANY NUMBER OF LETTERS
$6.00
Discounts to the Trade
S. D. CHILDS & COMPANY
200 Clark Street, CHICAGO



Hall's Patent Front Drive and Steering Device Patented October 1, 1901

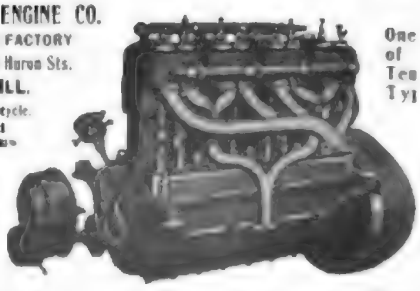
STOP
pushing your Auto. Get
FRONT DRIVE
which will PULL your Automobile same as a team of horses.
Also does away with Sticking in the Mud, Skidding on Wet Streets.
Write for full particulars
For sale at
BECK & CORBETT'S IRON
ST. LOUIS, MO.
Manufactured by
AUTO FRONT DRIVE MFG.
2821 Easton Avenue
ST. LOUIS, MO.

THE ORIGINAL AND RELIABLE
Searchmont Cars Rebuilt
TREBERT GAS ENGINE CO.
301 West Main St.
ROCHESTER, N.Y.



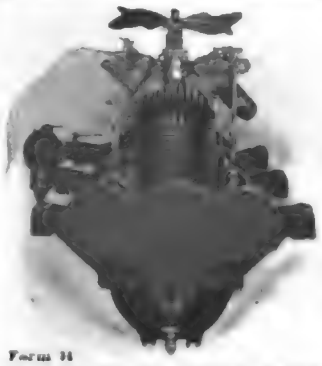
Up-to-date Engines, Transmission Gears and Clutches. Equal to the very latest French production: air and water-cooled motors. Air, 1 to 4 cyl., 2 to 15 h. p. Water-cooled Motors, 1 to 8 cyl., 10 to 45 h. p.
Reference, John Wanamaker, New York

MOTORS—All Commercial Size
CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury and Huron Sts.
CHICAGO, ILL.
1½-40 h. p. 2 and 4 cycle.
Designs and Specifications
From us are up to date and money savers.
SPECIAL SHOP BOOK
Inspection and Testing Experts
Transmissions, Reverse Gears, Marine Outfits
Telephone North 1607



One of Ten Ty
Type B—3½ x 4½ Eng

Digitized by Google



Form 34
Air-Cooled, 4-Cylinder Vertical. 3½x3½ In. 12-14 B. H. P.

MERKEL
High-Speed
Auto Engines

The Crank Case on the Merkel is made of Aluminum Alloy, 95 per cent. pure, 5 per cent. Nickel. The Crank Shaft is hammered forging, 30 carbon steel. Connecting Rods are drop steel forgings. The Cylinders are special hard, close grained casting with heads cast integral. The cooling is distributed equally to each cylinder. Merkel Engines induce the sale of your autos. Install them before cold weather comes. Write for prices to-day.

MERKEL MOTOR CO.
Factory, Layton Park
1897-261h Ave. Milwaukee, Wis.

Acme Motor Cars

POSITIVE CONTROL—STARTING AND STOPPING
ABSOLUTELY RELIABLE—GOING AND COMING

Without flourishes or fads Acme Motor Cars are the most widely developed and thoroughly practical made.
Are simplest in construction and easily accessible at any working point.

DEMONSTRATION IN TEN CITIES

ACME MOTOR CAR CO. :: Reading, Pa.

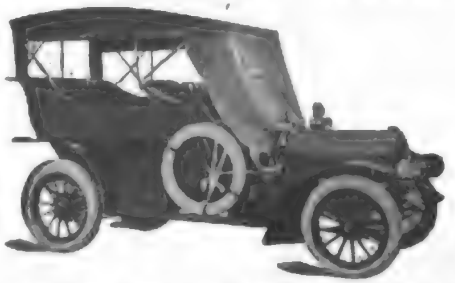
J. W. Mears, Brooklyn
Ensign & Moore, Binghamton, N. Y.
Devlin & Co., Chicago
Southern Automobile Co., Atlanta, Ga.
T. C. Bradford, Wilmington, Del.
Boston Motor Co., Boston.
Liberty Automobile Co., Pittsburg.
Acme Motor Car Co., Philadelphia.
Acme Motor Car Co. of N. Y., New York City

MUD GUARDS
HOODS AND FORGED IRONS

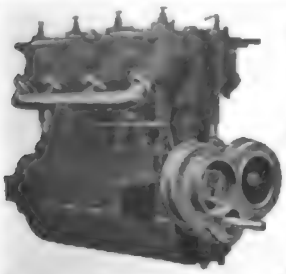
"The Best Kind"

HAYES MFG. CO.
750 Bellevue Ave. Detroit, Mich.

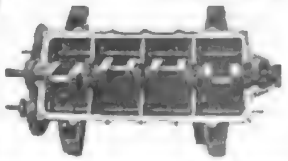
CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA



"Aster" Motors
From 1 to 60 H. P.
Automobile Motors
Marine Motors
Electric Groups
Stationary



Gas, Gasoline and Kerosene

A. J. MEYERS, Manager
Office, 1659 Broadway, New York

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
11 For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.
8 Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE,
but cannot cut the journal.

In ordering Phosphor Bronze Castings note adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

LATEST TYPE **WILLARD** LATEST TYPE
STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

Digitized by Google

GRAY AND DAVIS LAMPS

ARE HIGH GRADE LAMPS

Be sure YOUR CAR is equipped with them

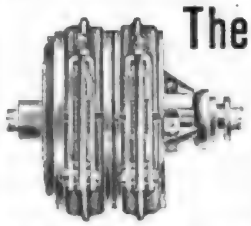
AMESBURY, MASS.

Rajah SPARK PLUGS

The Most Reliable IGNITION ABSOLUTELY SURE

Price, Postpaid $2.00

RAJAH AUTO SUPPLY CO., 140 Washington Street New York



The Ball Improved Transmission

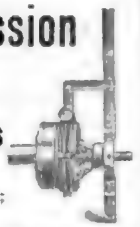
and REVERSE GEAR

— FOR —

Automobiles and Motor Boats

MADE ONLY OF SPUR GEARS

Patented April 9, 1901; Nov. 3, 1903; Jan. 12, 1904; Feb. 23, 1904.



NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.

Western Agents: J. H. Neustadt Co., St. Louis, Mo.

The IGNITION PROBLEM is SOLVED

in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No BATTERIES. No COIL. No COMMUTATOR.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 28th St., N. Y.

SPROCKETS

Chains and Differentials

CULLMAN WHEEL CO.

1021 DUNNING STREET, CHICAGO, ILL.

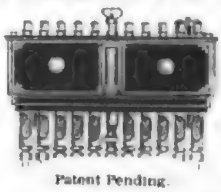
WHEN YOU THINK SPARK PLUGS

$1.50 THINK NEVER-MISS THAT'S ALL $1.50

The up-to-the-minute Jobber and Retailer can supply you. Ask him. There is none just as good. Stand ½ in. Winton. Auto Car Metric. Fully guaranteed. You go faster, farther and get back with a Never Miss. Just try and see. Coils, Battery Connections, Chain Tools, &c. There are a lot of Plugs, but only one Never-Miss, and made at Lansing Mich.

NEVER-MISS SPARK PLUG CO.

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed is itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

WITHERBEE

Storage Batteries

Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK

The "Breech-Block" Plug

The Plug With a Hat

To take out your watch or open *Breech-Block* requires just the *same* t*wo* tools, *same effort*, and *one* twist o*f* the *outer* porcelain to the whiteness of an

To remove the porcelain only, loosen clamping nut and it drops out of its hea and the gaskets of copper drop with it. dinging!

It is *nickeled* inside and out. *Highly* tabed and *dust-proof*. Sparks between adjustable points and not between one po and the *shell*. Its points are *protected*.

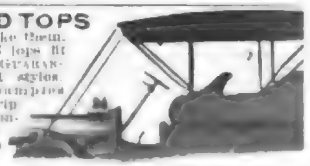
Porcelains are *hand turned* and so t feebly glazed that *you cannot stick* to th Their *threads* are cut to perfection, and every part of the idea of cheapness is left out of them. Can think of a way to improve them regardless of cost

Postpaid, Anywhere, $2. Booklet Free. Made by

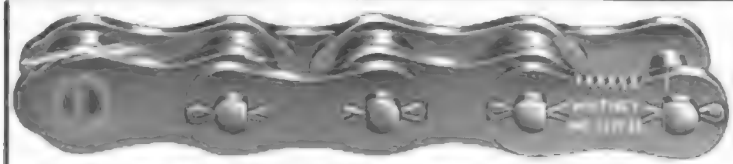
EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, I

GOOD TOPS

We make them. LONDON tops fit any car. GUARANTEED all styles. Prices, samples and description of construction mailed on request.



LONDON AUTO SUPPLY CO., 1229 Michigan Ave., C



You will notice

"WHITNEY" CHAIN

on most of the Leading Cars.

THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

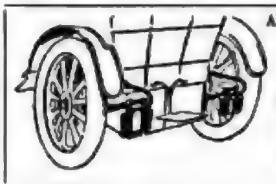
The Gilbert Mfg. Co.
New Haven, Conn.

Eclipse Pocket Ammeter

For General Battery Testing
0 to 20, 0 to 30 Amperes.

"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.

Eldredge Electric Mfg. Co.
Springfield, Mass. U. S. A.



The Supplementary Spiral Spring

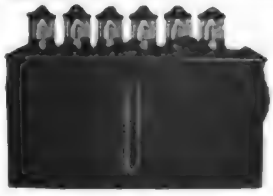
No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.

Force Feed Lubrication

Constant Sight Feed. No Liquids



McCord & Co., 1402-80-1046 Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

SHELBY SEAMLESS-STEEL-TUBING
BEST MADE FOR AUTOMOBILE CONSTRUCTION.
SEND SPECIFICATIONS
WE QUOTE PRICES
SHELBY STEEL TUBE CO.
PITTSBURG, PA.
BRANCH OFFICES—NEW YORK—CHICAGO.

If you want the agency for a $2,500 car to sell at $1,250, write today for the most attractive proposition in America.

Wayne Automobile Co., Dept. H. Detroit, Mich.

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

SKINNER
COMPOUND TIRE
PUMP

200 lbs. pressure with less effort than 50 with any other

$5 ON APPROVAL AT ALL DEALERS

Skinner & Skinner
Manufacturers
4133 Indiana Ave., Chicago

E. F. LESTER, Mf'r.

ALUMINUM
ARROW BRAND
SOLDER AND FLUX

FAYETTEVILLE, N. Y.

MENDENHALL'S ROAD MAPS

Road Maps—Ohio, 25c; S.W. Ohio, 35c; N. Ohio, 35c; Ind., 25c; N.W. Ind., $1.00; Ill., 25c; Ky., 50c; Mich., 25c; Pa., 25c; Ia., 25c; Mo., 25c; N. Y., 75c; N. J., 50c; Wis., 25c.
C. S. MENDENHALL, Pub., 512 Race St., Cincinnati.

"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN
124 W. Jackson Blvd., CHICAGO, ILL.

Tire troubled? Write for "Good News Book." Free. Goodyear Tire & Rubber Co., Wallace St., Akron, O.

GOODYEAR

1905 YANKEE GRADE METER. PRICE $7.50.

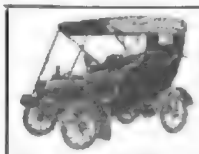
This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.00.

Double Insulation. Compression End. Right Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York.



HIGH-GRADE
EXTENSION AND VICTORIA TOPS
THE MYERS-DAYTON TOP CO.
Corner May and Commercial Streets, Dayton, Ohio

READ MOTOR AGE ... $2.00 per Year

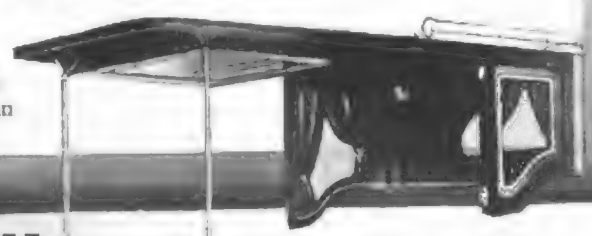
Digitized by Google

WELCH

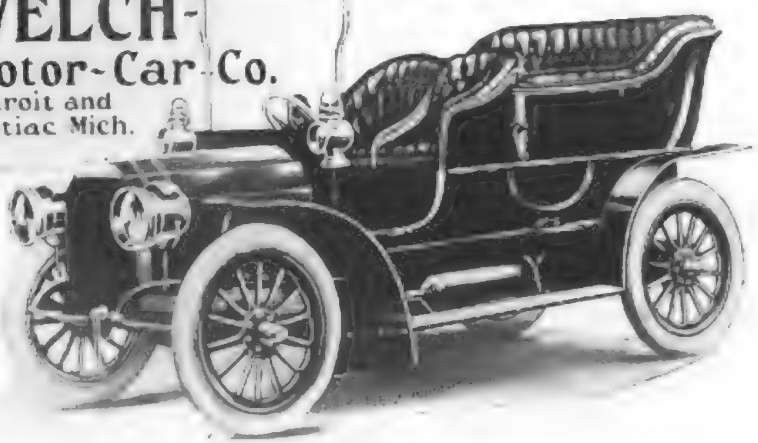
1906 LIMOUSINE CAR 1906
FOR
FALL AND WINTER USE
PRACTICALLY IMMEDIATE DELIVERIES

Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS.
Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. 4 to 50 miles on direct drive.

So simple a child can operate.



WELCH-
Motor-Car Co.
Detroit and
Pontiac Mich.



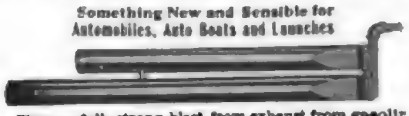
EVERY CAR
SHOULD BE EQUIPPED WITH
The
Wilson Auto Clock

TELLS TIME RIGHT
DAY AND NIGHT

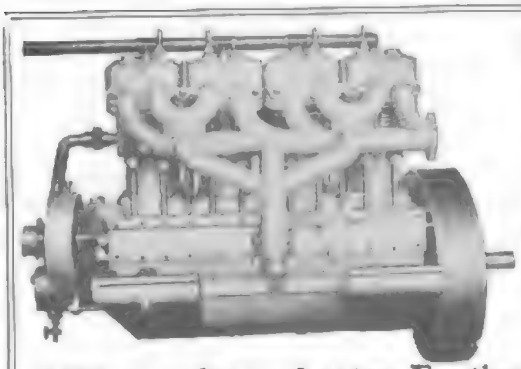
By day, the large figures can be plainly seen from the seat. A slight pressure of the button illuminates the face at night, producing enough light for various purposes on the road, as well as to "tell the time."
Handsome compact case of highly polished brass, containing famous Elgin works—7 jeweled movement..... $15
15 jewels, $25.00.
Wilson Auto Clock Co., Inc. 935 Arch St. PHILA.

CANDY CARBIDE
For FRENCH AUTO LAMPS (Impregnation dans le vide)
Packed only in 10 lb. cans. Price $2 each.
Discount to dealers in case lots of 12 cans.
SOLE MANUFACTURERS
ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET, NEW YORK

A PLEASURE TO HEAR
THE GABRIEL HORN
Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.
Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong as durable.
Comes in three styles—single, two or three horns.
Write today for Catalogue, giving prices and full information.
GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 50th St.



GASOLENE
MOTORS
FROM 1 to 12 Cylinders
12 to 180 H. P.

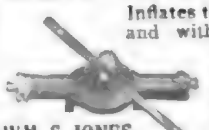
We build Gasolene Motors for Racing Cars, Passenger Busses, Delivery Trucks, Launches, and Grading Locomotives.

Correspondence Solicited

Milwaukee Auto Engine & Supply Co.
706-708 Winnebago Street. - - - - - Milwaukee, Wis.

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

LEA TIRE PUMP
Inflates the tires uniformly and with one-tenth the effort required by other pumps.



Write for latest illustrated booklet 33 and proposition to agents.
WM. S. JONES
112 N. Broad St.
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY
Trenton, N. J.

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES

Philadelphia, 260 North Broad St.
New York, 49th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 33 South Raymond Ave.
Minneapolis, 3d Ave. South & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 3305 Centre Ave.
Rochester, 170 South Ave.
Portland, Ore., 140 5th St., N.
Cleveland, 404 Huron St.
Detroit, 205 Jefferson Ave.
Chicago, 234 East Lake St.
Buffalo, 30 Pearl St.
Boston, 39 Stanhope St.
Savannah, 30 Bull St.
St. Louis, 809 Walnut St.
Denver, 1442 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

OLD Tires Made NEW
New Tires Made Puncture-Proof

NEWMASTIC FILLING
For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.
1303 Michigan Ave., CHICAGO, ILL. Tel. Sou'h 1301
ST. LOUIS, MO.

Bausch & Lomb
MANGIN
Search Light Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

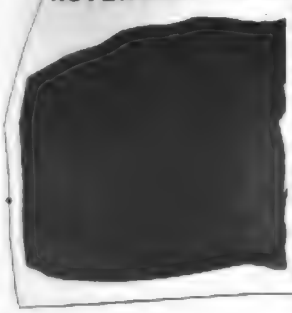
¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.
Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.
ROCHESTER, N. Y. NEW YORK, CHICAGO.
BOSTON, SAN FRANCISCO, FRANKFURT, A/m Germany.

RUTENBER GASOLINE GAUGE



is simpler in construction than any other gauge offered. No tape floats or magnetic arrangement to get out of order. Every Gasoline Automobile or Motor Boat should have one.

Agents wanted. Special inducement for hustlers.

RUTENBER CO.,
226 East 52d Street
CHICAGO

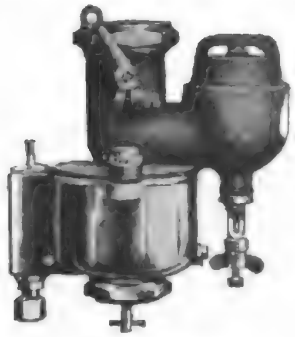
WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y.

ALUMINUM CASTINGS BRONZE

Digitized by Google

HOLLEY CARBURETORS



MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
⅝ in. and ¾ in. gasoline outlet	$11 00
1 in. gasoline outlet	12 00
1¼ in. gasoline outlet	13 00
1½ in. gasoline outlet	14 00

We are now prepared to furnish our new **Model "E"** carburetor for 1905 Winton cars Models B and C. This carburetor is furnished with aluminum manifold, so that old carburetor can be removed and the new one bolted in place with very little work. Price of special Model "E" carburetor with manifold for Model B and C Wintons, $18.00.

Increase the power of your car by equipping it with one of the following special **Holley Carburetors.**

SPECIAL SIZE FOR	
Oldsmobile Runabout	$12 00
" Tonneau Car	11 50
" Touring Runabout	11 50
Ford 10 H. P., Model C	11 50

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.
672 Beaubien St., DETROIT, MICH.

CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1297
1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1312 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Car Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago

RENZ & CO MANNHEIM, GERMANY
ESTABLISHED IN 1883
THE OLDEST AUTOMOBILE MAKERS IN THE WORLD
FIRST CAR PATENTED JANUARY 3 1886
OVER 4,000 NOW IN SUCCESSFUL OPERATION
Prices, $3,500 to $15,000
ALL CARS IMPORTED COMPLETE (LESS TIRES)
MEAD CYCLE CO., Chicago

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES
FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 49
EXCELSIOR SUPPLY CO
ESTABLISHED 1876 CHICAGO

OLDSMOBILE
Agents and Distributers for Illinois and Wisconsin
THE GITHENS BROS. CO.
1528 Michigan Ave., Chicago
Telephone, South 1658

GET YOUR TIRES FILLED WITH OUR
TIRE FILLING
And rid yourself forever of that constant fear of punctures, leaky valves, etc.
Write for particulars and testimonials
PULLMAN AUTO CAR CO.
5035 Cottage Grove Ave., CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
138 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention

ROCHESTER AUTO AGENCY

United States Automobile Co
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer Stevens-Duryea Orie
Pierce-Arrow Oldsmobile Buick

Lists of Auto Dealers and Owner
Verified list of 4,000 auto dealers in U. S.
Verified list of 50,000 auto owners in U. S. Al tells make of machine. No duplicates. Names a ranged alphabetically by towns. New names pu lished weekly. Postage guaranteed.
For full information address
Auto Directories Co., 108 Fulton St. N.
Established 1901.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
INCORPORATED
Distributers for
CHICAGO and MILWAUKEE
1722-26 Michigan Ave. Phone Lin South
311-25 Fourth St. Phone 2781 Main

Digitized by Google

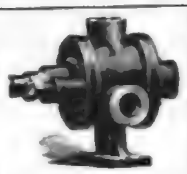
BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobiles. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., Ave. Ft. Wayne, Ind.



LOBEE ROTARY PUMP

400 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. **Lobee Pump Co.**, 240 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York. A. L. Dyke Auto Supply Co., 4703 Olive St., St. Louis, Mo.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.
352 S. Claremont Ave.
CHICAGO.

CHAIN TOOL

35c

THE HUSKY KIND

SENT PREPAID FOR 48c

THE MOTOR CAR SUPPLY CO.
1427 Michigan Avenue CHICAGO, ILL.

NEW CAT. READY

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
1020 Axtell Street CLEVELAND, OHIO

Special Design Finest Quality Built-to-Order

BODIES AND TOPS

C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

THE YANKEE SILENT MUFFLER (Pat.)—Excels all Mufflers because the discs expand according to the size of the explosion. A vacuum is created between the exhaust valves and the Muffler, and back pressure is overcome. 10 per cent more power guaranteed. Radiation so great that the Muffler keeps cool. Made to fit all makes of cars. Send for catalogue and price.

D. B. SMITH & CO., Utica, N. Y., U. S. A.

Of course if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
The Lewis & Matthews Co.
Foreign and Domestic Cars — Automobile Selling Agts. Garage and Supplies — 66, 68, 70 Stanhope St. Repairs — Cable Address: "Autohead" Used Cars
Telephone Tremont 711 — Boston, Mass., June 23, 1905

Herz & Company, 187 Elm St., New York, N. Y.:

Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1906 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.

Very truly yours, The Lewis & Matthews Co.
Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth
"BOUGIE MERCEDES" beat on earth.
It's DOUBLE STONE, will never crack
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York

Write for Vademecum of Ignition.

Special Prices on Clincher Tires

FOR OCTOBER

One of the best tires on the market. We are on the inside.

	Casing	Inner Tube
28x2½ . .	$13.94	$3.84
28x3 . .	22.80	4.64
30x3 . .	24.40	4.96
30x3½ . .	31.69	7.04
32x3½ . .	33.75	7.52
32x4 . .	38.93	9.09

We can supply other sizes at proportionate prices.

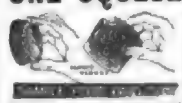
Neustadt Automobile & Supply Co.
826-28-30 S. 18th St. ST. LOUIS, MO.

ALUMINUM

Aluminum Automobile Parts a Specialty

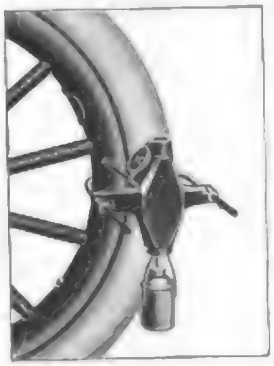
The Pittsburgh Reduction Company
Pittsburgh, Pa.

ONE SQUEEZE DOES THE BUSINESS



Nothing like it. Invest a quarter in a "GIBSON" Truck Purse, you'll never regret it. No removing of gloves to deposit or remove coin. Always open for money. All leather. Guaranteed or money refunded. Free samples for agents and dealers

GIBSON COIN PURSE CO., Box 1002, Bellefontaine, O.

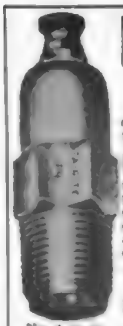


ANYBODY CAN USE IT

Blowouts, sandbolls, glass cuts or other damage spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co.
Topeka, Kan., U. S. A.



SIX-RITE

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary.

Condense Your Orders

thus obtaining lower prices, and use "Six-Rites" exclusively. 40 different sizes and styles. Porcelain and Mica. 75c to $4.00. Secure July, 1906, price list.

The R. E. Hardy Co.
225 W. Broadway, N. Y.

No. 4, ⅝-in. Porcelain, $1.80 — P. J. DASEY 631 Wabash Ave., Chicago — No. 30, ⅝-in. Mica, $1.75

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

Graphite for the Motor

DIXON'S GRAPHITE
Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.
Jersey City, N. J.

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 302 JACKSON BOULEVARD CHICAGO

SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

372 Birnie Ave. Brightwood SPRINGFIELD MASS.

SPIRAL TUBING RADIATORS

HOODS ANY STYLE OR SIZE

LONG MFG. CO.
381-3-5 Wabash Ave. CHICAGO

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

MOTOR AGE

GETS THE NEWS

1339 Michigan Ave., Chicago

Digitized by Google

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 74
Acme Motor Car Co. 71
Adams Co. 62
Adland Motor Co. 76
American Battery Co. 69
American Coil Co. 80
American Samson Leather Tire Co. 67
Apperson Bros. 71
Atwood Mfg. Co. 80
Austin Auto Co. 66
Auto Brass & Aluminum Co. 80
Auto Directories Co. 76
Automobile Equipment Co. 80
Automobile Front Drive Mfg. Co. 70
Automobile Supply Co. 69
Badger Brass Mfg. Co. 42
Baker Motor Vehicle Co. 55
Bausch & Lomb Optical Co. 75
Beaver Mfg. Co. 62
Billings & Spencer 80
Bowser, S. F., & Co. 77
Brennan Mfg. Co. 61
Briscoe Mfg. Co. 58
Brown, W. H. 73
Brown-Lipe Gear Co. 60
Buckeye Mfg. Co. 66
Buckeye Wheel Co. 71
Byrne-Kingston Co. 50
Cadillac Automobile Co. 35
Cadillac Co. of Illinois 76
Canedy, Earl 72
Childs, S. D., & Co. 70
Coey, C. A., & Co. 76
Continental Caoutchouc Co. 50
Continental Engine Co. 70
Continental Motor & Mfg. Co. 80
Corbin Motor Vehicle Co. 52
Corwin Mfg. Co. 50
Cullman Wheel Co. 72
Daimler Mfg. Co. 51
Dayton Electrical Mfg. Co. 70
Diamond Chain & Mfg. Co. 68
Diamond Rubber Co. 48
Diamond Stamped Ware Co. 37
Dietz, R. E., Co. 67
Dixon, Joseph, Crucible Co. 77
Dyke, A. L., Auto. Supply Co. 75
E. H. V. Co. 66
Eclipse Buggy Co. 80
Edmunds & Jones Mfg. Co. 73
Eldredge Electric Mfg. Co. 73
Electric Storage Battery Co. 75
Electric Vehicle Co. 59
Elmore Mfg. Co. 65
Excelsior Supply Co. 70
Fairmount Engineering Works 73
Ford Motor Co. 55
Franklin Mfg. Co. 43
G. & J. Tire Co. 56
Gabriel Horn Mfg. Co. 74
Garford Mfg. Co. 63
Gibson Coin Purse Co. 77
Gilbert Mfg. Co. 73
Gilsey House 69
Githens Bros. 70
Goodrich, B. F., Co. 54
Goodyear Tire & Rubber Co. 73
Gray & Davis 72
Hardy, R. E., Co. 77
Hartford Rubber Works ..... Cover
Hartford Suspension Co. 58
Haynes Mfg. Co. 71
Haynes Automobile Co. 65
Herz & Co. 58-71
Hoffeller Brass Foundry Co. 77
Hohheimer Soap Co. 63
Holley Bros. 70
Hussey Drop Forge & Mfg. Co. 77
Hyatt Roller Bearing Co. 80
Imperial Brass Mfg. Co. 80
Importers Co. 70
Jeffery, T. B., & Co. ..... Cover
Kilgore Auto Air Cushion Co. 62
Kimball, C. P., & Co. 77
Kirchberger, M., Co. 64
Kirk Mfg. Co. 65
Knublock & Heideman Co. 80
Knox Automobile Co. 67
Kokomo Rubber Co. 61
Leather Tire Goods Co. 63
Lester, E. F. 73
Light Mfg. & Foundry Co. 71
Link Belt Machine Co. 57
Little Wonder Carbureter Mfg. Co. 68
Lloyd Iron Rooding & Paint Co. 57
Lobee Pump & Machinery Co. 77
Locomobile Co. of America 50
Loftis Bros. & Co. 44
Logan Construction Co. 79
London Auto Supply Co. 72
Long Mfg. Co. 77
McCord & Co. 73
McDuffee Automobile Co. 76
Mead Motor Co. 76
Mendenhall, C. F. 73
Merkel Motor Co. 71
Mexican Mfg. Co. 75
Meyers, A. J. 71
Meyers Dayton Top Co. 73
Michelin Tire, American Agency 38
Miller, Charles E. 60
Miller Signal Co. 77
Milwaukee Auto Engine & Supply Co. 74
Milwaukee Steel Foundry Co. 74
Mitchell Motor Co. 36
Moline Automobile Co. 64
Morgan & Wright ..... Cover
Motor Age 48
Motor Car Specialty Co. 74
Motor Car Supply Co. 77
Mutty, L. J., Co. 80
National Motor Vehicle Co. 64
National Spring & Wire Co. 77
Neustadt Auto & Supply Co. 72
Never-Miss Spark Plug Co. 72
Newmistic Tire Co. 75
New Process Rawhide Co. 60
New York Gear Works 72
Nordyke & Marmon 68
Northern Mfg. Co. 63
Nyberg Automobile Co. 79
Olds Motor Works 51
Packard Electric Co. 72
Packard Motor Car Co. ..... Cover
Pardee & Ullman Co. 76
Pedersen, J. T. 72
Pennsylvania Rubber Co. 52
Pittsburg Reduction Co. 77
Pope Mfg. Co. 40-41
Premier Motor Mfg. Co. 47
Prest-O-Lite Co. 59
Pullman Automobile Co. 76
Quaker City Automobile Co. 76
Railway Appliance Co. 77
Rajah Auto Supply Co. 72
Reo Motor Car Co. 47
Robert Instrument Co. 70
Rose Mfg. Co. 70
Royal Motor Car Co. 67
Rubay, Leon 75
Rubber Goods Repair Co. 76
Rushmore Dynamo Works 53
Rutenber & Co. 75
St. Louis Motor Carriage Co. 45
Saks & Co. 56
Shawver & Co. 79
Shelby Steel Tube Co. 73
Skinner & Skinner 74
Smith, A. O., Co. 61
Smith, D. B., & Co. 77
Splitdorf, C. F. 65
Springfield Metal Body Co. 77
Standard Roller Bearing Co. 68
Steel Hall Co. 49
Stevens, J., Arms & Tool Co. 39
Stitch-In-Time Vulcanizer Co. 75
Stolp Mfg. Co. 69
Streit, A., Machine Co. 69
Supplementary Spiral Spring Co. 73
Swinehart Clincher Tire Co. 66
Syracuse Aluminum & Bronze Co. 73
Thomas, E. R., Motor Co. 45
Thompson, Charles A., Co. 73
Timken Roller Bearing Co. 53
Trebert Gas Engine Co. 70
United States Auto. Co. 75
U. S. Jack Co. 77
Veeder Mfg. Co. 69
Vehicle Equipment Co. 62
Wabash Railway Co. 79
Walworth Mfg. Co. 80
Warner Instrument Co. 60-61
Wayne Automobile Co. 73
Weber, O. F., & Co. 76
Weed Chain Tire Grip Co. 70
Welch Motor Car Co. 74
Western Tool Works 60
Wheeler, F. H. 58
White Sewing Machine Co. 49
Whitlock Coil Pipe Co. 69
Whitney Mfg. Co. 72
Willard Storage Battery Co. 71
Willis, E. J., Co. 73
Wilson Auto Clock Co. 75
Winton Motor Carriage Co. 34
Witherbee Igniter Co. 72
Wray Pump Co. 65

MISCELLANEOUS.

Advertisements under this head 2 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE—24 horse 1904 Thomas touring car. Top with glass front, 2 gas, 3 oil lamps, horn and tools. Car in first class condition. Cylinders recently refitted. Tires first class, extra tubes. Reason for selling, bought 1905 Thomas. Price, $1,200. H. E. Young, Hanover, Pa.

FOR SALE—Packard 1905 Model "N" touring car, in A1 condition, equipped with over $700 worth of extras, including the following: Extension cape cart top, glass front, electric searchlights, electric headlights, tail lamp, dash lamp and exploring lamp, with two 6-volt batteries, luggage carrier on rear, Gabriel horn, Warner autometer, dash clock, seat covers, tire carrier, foot rest and robe rail in tonneau, also aluminum storage box, safety spray, B & J lockswitch, lamp covers, etc. This car is guaranteed in absolutely first class condition in every respect and will be sold at a decided bargain considering the condition and equipment. Pardee-Ullmann Co., 1218 Michigan Ave., Chicago, Ill.

FOR SALE—1902 Winton; fine condition; a bargain. H. Thomann, Riverside, Ia.

FOR SALE—A Prescott steamer, 1905 style, in first class shape, used only three months. Reason for selling, want to buy a larger car. Make offer. Address Motor Age, Box 4.

FOR SALE—Established auto factory in good manufacturing and distributing center in middle west. New models completed. Satisfactory reasons for selling. Address P. O. Box 194, Indianapolis, Ind.

WANTED—Second hand motor cycle for cash. Must be a bargain. B. G. Raymond, St. Cloud, Minn.

FOR SALE—1905 Marion air-cooled car, or will exchange for a 1905 White. Dr. A. B. Poore, Cedar Rapids, Ia.

FOR SALE—Haynes-Apperson, 16 h. p. touring car; used very little; in perfect condition; a snap for the early buyers. Burney Bird Auto Co., 319 Wabasha St., St. Paul, Minn.

FOR SALE—1904 Northern touring car, with new 1905 motor, extra tires, large headlight. A bargain. Address C. E. Haynes, Cadillac, Mich.

MANUFACTURERS

Desiring a practical "Auto" man with sound business judgment, experience in manufacturing lines and repairs on cars, for salesman, agent, office, etc., will correspond immediately. Address C. B., Motor Age.

WANTED—First class automobile shop man. Must be a good all-round man. State age, experience, present wages, wages expected. Write for further information and send references to Abbott Cycle Co., New Orleans, La.

FOR SALE—Model L Rambler; has double opposed motors, 16 h. p.; looks well and in good condition; tires almost new; sell cheap. One 1905 Model F four-cylinder, air-cooled Premier; new; never run; sell at a bargain. W. E. Rudy, Lima, Ohio.

PEERLESS 1904, four cylinder, 24 h. p., $1,500; aluminum body; tires new; will give one hundred mile demonstration. Bargain. D. W. Worthington, 326 N. Broad St., Philadelphia, Pa.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

BARGAIN—1904 White Steamer, in first class condition; looks like new nearly; not much used; thoroughly reliable. Buy the best. Alfred L. Wilson, 105 Miller Ave., Columbus, O.

FOR SALE—A good established automobile business located in the northern part of Illinois in city of 40,000. Only automobile business in city, with over one hundred cars in use. Party owning business engaged in other lines and cannot give sufficient time to the automobile work. Address J. G., Motor Age.

FOR SALE—Knox, $600. Nearly good as new. John W. Higgins, 228 West St., Worcester, Mass.

AUTOMOBILE FIRM closing out business. Studebaker electric runabout (brand new) at great reduction. Pierce stanhope (slightly used, fine condition) very cheap. Address 561 Woodward Ave., Detroit, Mich.

FOR SALE—1905 "Franklin" runabout in absolutely first class condition, used for demonstration only, and has had the best of care and is in every respect as good as new. R. D. Hamlen, 230 Grand Ave., Milwaukee, Wis.

FOR SALE—Olds Runabout, just overhauled and in best of running order. Rear tire nearly new. New top, never used. $100 worth of extras. All for $370. Will demonstrate. C. D. Dullo, No. 42, Webster, Iowa.

MARION side entrance, four-cylinder car, $1,050. A. Zell, Park Ave. and Biddle St., Baltimore, Md.

FOR SALE—Packard Model L, four-cylinder, rear entrance, perfect condition, new last November, run but 1,500 miles; price $2,000. Also Packard, four-cylinder, Model N, side entrance, perfect condition, new in June, run 2,000 miles; price $2,100. So perfect the condition of both machines that they can scarcely be told from new cars. Address Theodore Strawn, Ottawa, Ill.

FOR SALE—1905 Olds Runabout; excellent condition; not run over 800 miles; $220 worth of extras. First check for $570 takes it. I. A. Coon, Manchester, Iowa.

FOR SALE—Light touring Cadillac, Model 1905, perfect condition. Address P. O. Box 396, Johnstown, Pa.

FOR SALE—1904 Indian motorcycle, perfect order, $125. Lock Box No. 97, Muskegon, Mich.

WANTED—Light touring car; good order, priced right. Franklin preferred. Lock Box Newport, Ind.

WANTED—Automobile agent for Illinois product. Covers four-cylinder cars second to none made in this country; prices, $3,000 to $4,000. Certain conditions make this a great opportunity for high class man with large acquaintance and capital enough to handle the business on a liberal scale. D., care Motor Age.

Digitized by Google

FOR SALE—Model E Rambler, runabout, in first-class order; or will trade for electric machine. Address F. W. P., care MOTOR AGE.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

DEMONSTRATING cars at low prices. '05 Model F Knox touring car, glass front, top, etc., run less than 1,200 miles, $1,500. '05 Elmore touring car, top, etc., run only 500 miles, $1,000. '05 Stanley surrey, fine condition, $750. '05 3-cylinder Cameron runabout, good as new, $500. '04 Stevens-Duryea, $700. Lowell Auto. Corp., Appleton St., Lowell, Mass.

WILL EXCHANGE 16 H. P. car, O. K., for runabout Rambler, Olds or Orient preferred. Lock Drawer 189, Hawarden, Ia.

FOR SALE—1905, 20 H. P. car. Cost $1,700; will sell for $1,150. Guaranteed O. K. Address X. Y., MOTOR AGE.

FOR TRADE—A new $500 Schiller piano for runabout, Mitchell preferred. Schiller Piano Co., No. 823 Francis St., St. Joseph, Mo.

FOR SALE—Locomobile steamer, perfect condition, $175; 2 Model "E" Ramblers, good condition, $225-$300; 2 12 h. p. double cylinder Elmores, detachable tonneau seats, $250-$450; 1 machine with 7 h. p. Oldsmobile engine, great bargain, $125; 20 h. p. Phelps, 3 cylinders, $500; Model "E" Rambler with wheel steering, run less than 150 miles, $425; 1903 Winton, 20 h. p., with tonneau, $900; 10 h. p. Ford runabout, $375. E. S. Youse, Reading, Pa.

FOR SALE—Folding bow top, never used; will sell at bargain. Address Richard Massey, Birmingham, Ala.

WANTED—To buy good second-hand Petrol cars, also chassis or sets of parts for building same; state terms, etc. The Thomson Motor Car Wks., Armadale, Victoria, Australia.

FOR SALE—Marble Swift 15 H. P., friction transmissions; bargain; new. 729, 110 Monroe, Chicago.

FOR TRADE—A new piano, worth $400, for 1904 or 1905 runabout, Olds preferred. E. E. Beatty, Mason City, Ia.

1904 Peerless, 24-30 horsepower, in first-class condition. Must sell at once, cheap. H. N., care MOTOR AGE.

SPECIAL BARGAIN—'04 Cadillac tonneau, $550; Olds, Michigan or Cameron cars cheap. Motor-cycles, $85 to $125. C. R. Baker, Salem, Ohio.

FOR SALE—1905, 16 H. P. Elmore car. Run 3 months. 1 outside casing. 4 inner tubes. Extra tools. Price $1,000. J., care MOTOR AGE.

FOR SALE—A number of second hand autos in first class condition. A. H. Ekbergh, 907 Nicollet Ave., Minneapolis, Minn.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. G. M., care MOTOR AGE.

FOR SALE—1904 Winton; elegant condition; have bought Model A Winton. C. E. Wilkins, Dewey Hotel, Omaha, Neb.

FOR SALE—High grade 8 h. p. double opposed engine, $125. 4 h. p. Marine and Auto motors, $65. Write. A. J. Houle Co., 8. East St., Holyoke, Mass.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

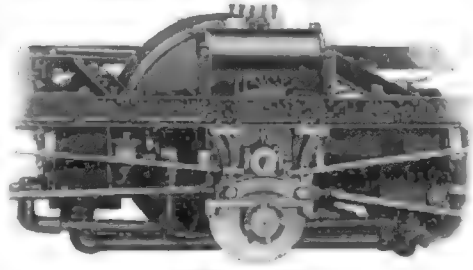
FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

WANTED—By first class auto engineer and salesman, position as salesman with good company or agent. F. M., care MOTOR AGE.

CHICAGO School of Motoring, the original automobile school in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request. Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied. Chicago School of Motoring, 264 Michigan Ave. Phone Har. 119.

EQUALIZED SPRING TRUSSED FRAME
OF THE
1906 Logan
That Car of Quality

One of Many Points of Strength



One of Many Reasons for Comfort

PATENT PENDING

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

WANTED—A good second-hand or demonstrating car; in first-class condition. Prefer Cadillac model "B" or "F," 1905, or a light tonneau car of standard make. Chas. H. Wise, Lohrville, Ia.

TIRES.

ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second-hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

FOR SALE—1904 Winton touring car with top, 2 headlights, baskets, etc.; car in perfect condition; in need of money and will sacrifice for $800. A. W. Granger, Grand Hotel, Cincinnati, O.

AUTOCAR, type S, with four cylinder 3½x4 Rutenber engine, magneto and battery ignition, McCord force feed oiler, cape top, Rushmore lamps, extra tubes, tools, etc.; good condition. Also Remy four-cylinder magneto and coil (new). Thomas H. Halton, Allegheny Ave. and C St., Philadelphia, Pa.

FOR SALE—Small runabout, complete all but motor, for $125. Address Reinke, 150 W. 68th St., Chicago, Ill.

FOR SALE—Winton, 1903, with top, acetylene lights, new rear tires; car thoroughly overhauled and in fine condition. Price $750. Address M. F., care MOTOR AGE.

WANTED—Growing concern wants assembling department foreman. Good chance for experienced man to better himself. M. E. M., care MOTOR AGE.

FOR SALE—New Brass Trimmed, Plate Glass Front, Canopy Top, cost $125.00; our price, $65.00. George Auto Co., George, Ia.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Tom Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

NYBERG AUTOMOBILE WORKS. CHICAGO. ILL.

Fully describ d in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.
661-673 Beaubien St. DETROIT, MICH.

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing
A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas.

REST YOUR TIRES with the "Springfield" Auto Lift

Showing Lift in Position to Receive Car.
You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.
E. J. DAY & CO., Pacific Coast Agents, San Francisco
THE SHAWVER CO., Springfield, O.

FOR $2 PER YEAR
READERS OF
MOTOR AGE
Receive 1560 pages of interesting mechanical descriptions and touring hints
WHERE CAN YOU BEAT THIS?

Google
244994B

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH

The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston
Mass.
U. S. A.

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

Every operator of an Automobile, Motor Cycle, or Launch should own one of our

AMERICAN POCKET AMMETERS

For testing dry cells. The only RELIABLE pocket ammeter on the market. Lasts a lifetime.

AMERICAN COIL COMPANY
P. O. Box 591, West Somerville, Mass.
WRITE FOR 1905 CATALOGUE
AUTO SUPPLY CO., 1662 Broadway, New York Agents
GEO. H. BILL, 305 Larkin St., San Francisco, Cal.

Brass Work
OF ALL KINDS TO ORDER
Send us a sample for estimate of cost
IMPERIAL BRASS MFG CO
249 So. Jefferson St. CHICAGO

MOTOR CAR SPECIALTIES
and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

ORIGINAL MANUFACTURERS OF
AUTO TOP MATERIALS
We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.
Write for samples and price list.
L. J. MUTTY CO., Boston, Mass.

Want to Buy Good Four-Cylinder Engine Works

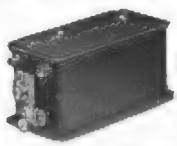
Engine suitable for Commercial Purposes

Must be A1 in Every Particular

Address "BUYER,"
Motor Age, Chicago

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

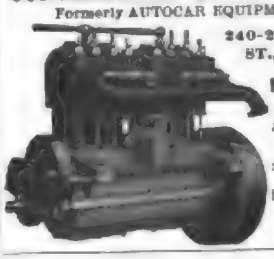
Eclipse Tops
LOOK BETTER
WEAR BETTER
MADE BETTER
ARE BETTER
than any others. It's an old story with us. We have been making good tops practically all our business lives.
Write for catalogue.
Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.



JUMP SPARK COILS
For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.
Send for Catalogue K.
THE KNOBLOCK-REIDEMAN MFG. CO., South Bend, Ind.

SPECIAL AUTO PARTS
We make parts from your own design from either brass or aluminum
ON CONTRACT BASIS
Our positive power driven sight feed OILER will interest you. Write for description.
AUTO BRASS & ALUMINUM CO., Flint, Mich.

CONTINENTAL MOTOR
Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by
CONTINENTAL MOTOR MFG. C
Formerly AUTOCAR EQUIPMENT CO.
240-244 W. LA ST., CHICAG



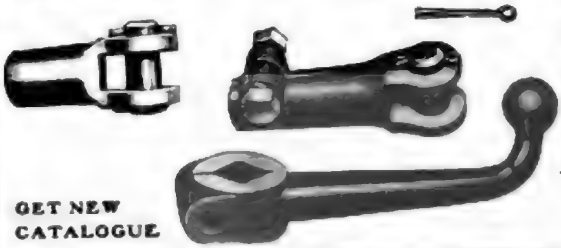
BEWARE C IMITATI
Also Marine verse Gear Propellers. Send for Ca
PETERSON &
Direct Fac Representa

Our New Size

In addition to our Size "B"

Steering Connections

we now have ready Size "C," with 1¼ in. ball and socket joints and all other parts proportionably larger, machined and ready for use.



The Billings & Spencer Co.
HARTFORD, CONN.

GET NEW CATALOGUE

ATWOOD
STAY-LIT
LAMPS ARE THE BES
ATWOOD MFG. CO., Make
Send for Catalogue Amesbury, M

Digitized by Google

MOTOR AGE

VOL. VIII NO. 15 CHICAGO, OCTOBER 12, 1905 $2.00 Per Year

READY FOR THE SECOND VANDERBILT

EVEN THE HORSE BUTTS INTO THE GAME ON LONG ISLAND

NEW YORK, Oct. 11—Special telegram—Chairman Robert Morrell and his cup commissioners have done all they can to have everything in readiness for the second competition for the Vanderbilt cup next Saturday over the 283 miles of highway on Long Island. The roads have all been freshly oiled, the constables who will police the course have had their final instructions, train service has been looked after, seating accommodations for the crowds arranged so far as is possible and if the weather man is kind there will be nothing to prevent the affair being a grand success. At this writing it is extremely doubtful if all the twenty original nominations will start. The withdrawal of Werner has left the German team in the hole, for while Basle and the Bowden Mercedes have been suggested as substitutes no application has been made to the cup commission to make the change, although the Bowden Mercedes has been declared eligible for the race. The Warden Mercedes has had hard luck in cracking a couple of cylinders and may have to drop out unless it can be fixed in time or an extra engine borrowed from Graves or Keene. Sartori broke his clutch this morning, but it is expected this will be easy to fix. None of the other cars have suffered any and it is expected that at least eighteen will line up for the start. That the time of the winner will exceed the predictions of the wiseacres after the trial seems certain. Practice trials by the foreigners, who have been the only ones to pull the throttle wide open, have shown that the course is undoubtedly one of the fastest ever used for an automobile road race, so it will surprise no one if between 62 and 65 miles an hour is averaged in the big event. The Americans have been saying nothing, most of them jogging along quietly, rounding out their road education and making themselves letter perfect for the actual competition. That the crowd will be a record one goes without saying, all the boxes and parking spaces

SIGNORA CEDRINO TURNS ASSISTANT MECHANIC

Digitized by Google

at the grandstand having been sold a week ago. Starter Wagner has brushed up his Italian, German and French and is prepared for the linguistic efforts of his life, so nothing remains but to run the race.

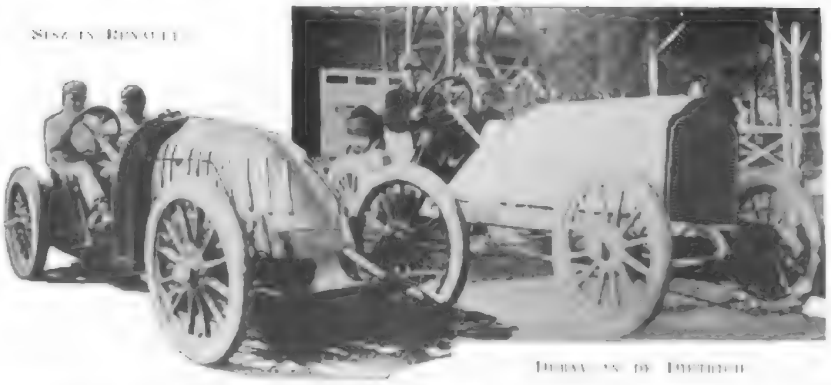
SARTORI BREAKS HIS CLUTCH

New York, Oct. 11—Special telegram—Sartori, in rounding the Jericho turn in practice with the Vanderbilt Fiat, broke his clutch this morning. In approaching the turn he threw out his clutch and in throwing it in again too quickly the break occurred. His car was towed back to the Fiat garage. It is said that a repair can readily be made in time for Sartori to start in the race.

Every effort is being made to repair the two cracked cylinders in the Warden Mercedes. Smith & Mabley, who are doing the work, expect to make a successful brazing which will carry the car through the race as well as the original. In a final emergency, as a last resort, an effort will be made to borrow an extra engine from Keene or Graves.

The Jericho pike was oiled again yesterday and left a slippery surface. The drivers accordingly practiced with care this morning. Lancia, Keene and Jenatzy made laps in 25 minutes, Nazarri 28, and Sisz 26. Christie, Heath and Dingley made slow rounds.

A story comes from the course this afternoon, that the Italian team men went to the White quarters at Bull's Head this afternoon with the idea of attacking Walter White, whom they accused of refusing to yield the road to allow Nazarri free passage in practice this morning. Walter White was not there. It is said that they went away muttering threats to ditch the White racer when they next encountered it on the road. There is no time to investigate the report and it is merely given for what it is worth. If White held the road, he had a perfect right to do so. Any attempt to ditch White would be a foolish move of equal peril to the Italian cars and it would not be good policy for the foreigners to arouse any American resentment, which might result in somebody getting roughly handled. The story is probably a mere rumor phoned in by some one who overheard some roadside gossip.



SISZ IN BENAULT

DURAY IN DE DIETRICH

Trains will leave the Thirty-fourth street ferry Saturday morning at 4 o'clock for Garden City, where an hour's stop for breakfast will be made; and another at

LANCIA, THE ITALIAN FAVORITE

5 o'clock direct for Mineola. Ferry boats will leave every 15 minutes and will take aboard all cars possible.

SPECULATION ON SPEED

New York, Oct. 10—An inkling of what may be expected in the direction of sustained speeding in next Saturday's race was given during this morning's practice by Wagner with the de Dietrich and Sisz with the Renault. That the prophesy of the foreigners that 63 miles an hour at the very least may be looked for is made with good grounds was proved beyond question. Wagner covered 3 laps at an average of 26.12, including stops for gasoline and water each time. This showed 1 hour 18 minutes 36 seconds for 84.9 miles as against 1 hour, 32 minutes 36 seconds scored by Tracy, the leader at this point in the American race. The average per hour was a bit over 65 miles an hour.

Hardly less meritorious was the run of Sisz, who covered 4 laps at an average of 26.30, or, in other words, 1 hour 48 minutes for 113.2 miles, as against Dingley's 2:00:50 in the elimination trial, the Renault's average was 64.07 miles an hour.

By way of a sop to American hopes, however, it is to be recorded that Christie picked up Wagner en route and trailed him mile after mile without being shaken off, despite the fact that only three cylinders of the direct drive racer was in commission owing to a broken porcelain.

A much to be regretted accident occurred during practice, which may rob the German team of another member. It was the cracking of two cylinders of the Warden Mercedes. It is possible, though, that Warden may be able to borrow an engine from Graves or Keene, each of whom has an extra one in his repair shop.

The chances of Basle and the Bowden Mercedes being substituted for Werner are not good. At last night's meeting of the commission there was nothing at hand in the way of a request for the substitution by Mr. Dinsmore, on which action could be taken and so none was. E. T. Birdsall's report, however, was that the Bowden car was eligible. As a matter of fact, Basle has not been over the course and putting him in the race at the last moment might be unwise. Should Warden, however, be down and out for good, there would seem to be a chance for Basle being put in after all that the German team may have more than two representatives.

At this late day there is little inclination on the part of the drivers to take the risk of fast speeding. The laps this morning were rather cautiously covered as follows: Jenatzy, 29 minutes; Cedrino, 28 minutes 30 seconds; Nazarri, 26 minutes 40 seconds Sartori, 35 minutes; Tracy, 33 minutes 30 seconds; Dingley, 32 minutes 30 seconds Campbell, 48 minutes, and White, 45 min

FACTS ABOUT THE TWO VANDERBILT CUP RACES

The course—A circuit on Long Island, starting at Mineola, where the grand stand is located, thence through Jericho, East Norwich, Brookville, Greenvale, Albertson, Lakeville and Hyde Park to Mineola.

Distance of the 1905 race—Ten rounds of 28.3 miles each; total, 283. Turns made to the left.

Distance of 1904 race—284.4 miles.

Number of entries for 1905 race—Twenty; five each representing France, Germany, Italy and America.

Number of starters in 1904 race—Seventeen, representing France, Germany, Italy and America.

Starting time of 1905 race—6:30 a. m., October 14, cars leaving at 1-minute intervals.

Number of corners on course—Six, of which five are to the left and one to the right. No controls and no official stops required.

Winner of 1905 American eliminating trial—Bert Dingley, in Albert L. Pope's 50-horsepower Pope-Toledo.

Winner of 1904 Vanderbilt cup race—George Heath, in a 90-horsepower Panhard, representing France.

Time of winner of 1905 American eliminating trial—2 hours 50 seconds.

Time of winner of 1904 Vanderbilt cup race—5 hours, 26 minutes, 45 seconds.

Average speed of Dingley—50.2 miles an hour.

Average speed of Heath—52.2 miles an hour.

Referee of 1905 race—W. K. Vanderbilt, Jr.

Chairman of Vanderbilt cup commission—Robert Lee Morrell.

Starter—Fred J. Wagner.

Value of Vanderbilt cup—$2,000

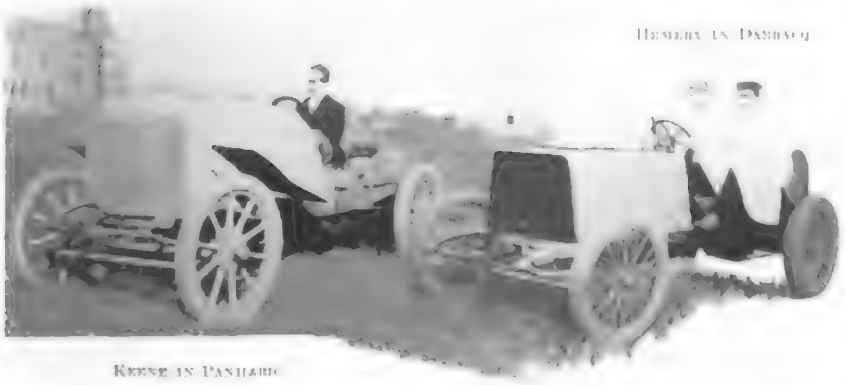
Weight limit of all cars in 1905 race—2,204 pounds.

Highest power—Duray's de Dietrich, 130 horsepower.

Lowest power—White Steamer, 40 horsepower.

Types of cars—One steamer; one six-cylinder gasoline car; all others four-cylinder gasoline cars.

Digitized by Google



KEENE IN PANHARD

utes. After covering laps in 50 minutes Lancia and Keene did not again make their appearance at the timing station at Krug's. Lytle is expected at Pope circle today by camp followers of the Pope man.

At the request of the foreign drivers Senator Morgan has postponed his banquet to them at the New York Press Club 1 week. The affair will take place the evening following the Dewar cup race. The Automobile Club of America is to give the European visitors a smoker and banquet at its club rooms next Monday evening.

Each of the three tires represented—Diamond, Michelin and Continental—will have five repair stations, each manned by an adequate force of quick repair experts. Car repair stations will be established near them by the users of their tires. Tents, grand stands and refreshment booths are now being erected all along the Jericho pike in the neighborhood of the grand stand. An addition to the latter is being built, which will add 120 seats. From the stand to the Mineola railroad crossing below Krug's, wire barriers will be stretched to keep the crowd back from the road.

KEENE KICKS ON No. 13

New York, Oct. 9—In response to a vigorous kick put up by Foxhall P. Keene at his allotment of 13 on the occasion of the drawing of the order of start at the A. C. A. last Monday night, the members of the German team met at the Garden City hotel Saturday morning and drew for the order of their start. Mr. Keene has a bit of the superstition of an all-around sportsman and particularly the dread of a turfman for the hoodoo number. He insists, though, that his kick was rather at the arbitrary allotment of his place in line by Mr. Graves and Mr. Stevens after the German team had drawn No. 1 than at the No. 13. He thought he should have had a chance to draw a place higher up in the line of starters, and so made formal protest to Chairman Morrell. This diplomat easily brought about another drawing.

For the third time the lucky Graves pulled No. 1 from the hat and again allotted it to his driver, Jenatzy. Mr. Keene bettered his place by drawing No. 5. Mr. Worden, who first was given No. 5, dropped back to No. 9, just behind Nazzarri. No. 13 fell to Mr. Stevens, who, it is reported, through Campbell, will if compelled to take that place in line, insist in substituting the letter Y on his car in place of the hoodoo number.

No. 17 again fell to Werner; but Werner did not come over because Clarence Gray Dinsmore could not get his Mercedes from the Connstatt factory in time for shipment. It is possible, though, that this number may be borne by a substitute; for as soon

JENATZY, GERMANY'S PRIDE

as Dinsmore announced the withdrawal of Werner, Chairman Morrell got busy on the Boston long-distance wire with a suggestion to Henry L. Bowden that he substitute Flying Dutchman II, his 90-horsepower Mercedes, which last year secured the track records from 3 to 10 miles at Providence, with Charles Basle as its driver. Bowden replied that there had been some home tinkering done with the transmission, which might make the car ineligible under the rules. Anyhow, he promptly shipped the racer to this city for inspection by E. T. Birdsall, of the A. A. A. technical committee, who will report his findings at a meeting of the commission at Garden City tonight.

EARLY WEEK GOSSIP

New York, Oct. 9—In automobiledom there is no talk but of the Vanderbilt cup race. Now that the foreigners have arrived and the papers are filled with their pictures and stories of marvelous speed accomplishments, the general public has caught the enthusiasm of the race and one overhears the names of Lancia, Hemery, Jenatzy and the whole outfit of cup candidates in subway and elevated train talks. As for the Long Islanders of the Nassau county vicinage, they have given themselves up soul and body to the race. At roadside taverns o' nights the farmers gather and talk race, and in the early morning hours the rustics perch on the fences to see the machines go by.

The chief center of action and gossip is at Frank Krug's, at Mineola, just below the grand stand. Here are quartered in the garages the thrifty Krug built especially for the race times, Sisz with his Renaults and Duray with his de Dietrichs, for each is supplied with two cars. In barns hard by are the Panhard of Heath and the Mercedes of Jenatzy. Less than a mile away, at Poirrier's, near Hempstead, is the Italian camp, which mechanics included numbers twenty men, the biggest outfit of the race.

John B. Warden makes his headquarters at the Garden City hotel. All these camps are well represented at the mighty gathering at Krug's, where piano-playing, singing, lively banter and warm argument come in turn. Once in awhile some of the boys from the Pope circle come over to hobnob with the Europeans.

The White outfit is at Bull's Head tavern, and the Darracq people have engaged

NOMINATIONS IN VANDERBILT CUP RACE OF 1905

GERMAN TEAM

Start	Driver	Car	H. P.	Owner
1	Jenatzy	Mercedes	120	Robert Graves
5	Keene	Mercedes	120	Foxhall P. Keene
9	Warden	Mercedes	120	John B. Warden
13	Campbell	Mercedes	90	S. B. Stevens

H. L. Bowden's 90-horsepower Mercedes, driven by Basle, will start seventeenth if it is substituted.

FRENCH TEAM

Start	Driver	Car	H. P.	Owner
2	Duray	De Dietrich	130	De Dietrich Co.
6	Wagner	Darracq	80	Darracq & Co.
10	Sisz	Renault	90	Renault Brothers
14	Heath	Panhard	120	Panhard & Levassor
18	Hemery	Darracq	80	Darracq & Co.

AMERICAN TEAM

Start	Driver	Car	H. P.	Owner
3	Dingley	Pope-Toledo	60	A. L. Pope
7	Tracy	Locomobile	120	Dr. H. E. Thomas
11	Christie	Christie	60	Walter Christie
15	Lytle	Pope-Toledo	90	A. A. Pope
19	White	White Steamer	40	R. H. White

ITALIAN TEAM

Start	Driver	Car	H. P.	Owner
4	Lancia	Fiat	110	Hollander & Tangeman
8	Nazzari	Fiat	110	Hollander & Tangeman
12	Cedrino	Fiat	110	Hollander & Tangeman
16	Chevrolet	Fiat	90	Major C. J. S. Miller
20	Sartori	Fiat	90	Alfred G. Vanderbilt

Digitized by Google

CEDRINO AND SARTORI, IN FIAT CARS, MEMBERS OF THE ITALIAN TEAM

the whole Bull's Head inn. Joe Tracy is at Lakeville with the Locomobile, Christie is at the Beckman estate down the Jericho pike, and Campbell puts up at the Mansion house. Foxhall Keene stops at his father's country place at Far Rockaway.

At any hour of the day a visitor to any one of the camps is sure to find a bunch of mechanics puttering with the racing cars, captained by their drivers, who seem to be working the hardest of all. There seems to be always a little bit more to be done to a car. No driver appears satisfied that it is put as it ought to be and a pulling apart of the whole machine looks to be the invariable postscript to a trial.

It has taken a lot of time to get the two Darracqs and the Lancia and Nazarri Fiats cleaned up and put in order for practice. They were shipped direct from the Florio cup race and their machinery was clogged with dirt and oil. This morning was the first time that Lancia had his racer out. He covered successive laps in 27 and 26 minutes, which was a satisfactory showing for a first tryout in the minds of those who can see none other in the race but Lancia.

The practice hours, from daylight to 7:30 o'clock, are, of course, the interesting times. Long before sunrise the camps are astir. With the first peep of day the drivers are on the road. Most of them pilot their racing cars, but others are content to practice on the turns with stripped touring cars.

There have been, as might be expected, stories of lap times scored in practice that are hard to credit, though on the whole the reports of the early morning clockers seem to be well within reason. The published statement that on Friday morning Hemery scored a lap in 21 and Duray a circuit in 22 minutes is hard to believe. This would mean an average per mile of about 45 seconds and that, too, in the face of all the sharp turns and twistings of a road route. The fastest lap in last year's race was made by Tarte in 24:04. Those who argue in favor of the acceptance of the 21 minutes and 22 minutes of Hemery and Duray point to the fact that a lap last year was a fraction of a mile longer, that two stops for controls had to be made and that the 1905 cars are seconds faster to the mile than those of last year. On the other hand it must be remembered that last year the racers had two very long straights for fast going. Even bets have been made that neither 23, 22 nor 21 minutes wil be beaten on the day of the race. Friday is the only day that Hemery and Duray have attempted fast going.

The Americans, barring White, have been conspicuous by their absence from the course the past week. Every morning, though, Walter White has made his two or three rounds at a safe, even rate of going. He is absolutely non-committal as to his opinion of his chances and will go no further than to intimate his belief that the average time of the leaders will be by no means as fast as some of the quoted laps would indicate. Tracy got back from the factory with his Locomobile yesterday and gave it an easy try-out this morning. Christie has been at work a week over some additions and alterations to his car. Dingley got back to Garden City with his four-cylinder Pope-Toledo on Thursday and in his try-out this morning went a bit faster than his first lap in the eliminating race, which he did in 27:58, the fastest of the race. Lytle was due to reach Pope circle yesterday, but was not reported on the course this morning.

In the hurrah that is being made over the practice of the foreigners one hears little mention of the Americans. The latter as yet have not made any high speed attempts and are making confidants of no one as to their hopes or plans for the race. Dingley, Tracy and White are generally estimated as having the best chance at making a creditable showing. Christie and Lytle are regarded as big gambles. The former's great speed is recognized, and should any great surprise be sprung by the Americans it is surmised that it will come either from White or Christie.

Automobilists who have persisted in speeding over the course have fallen into the time traps literally by the dozens. Included among the victims have been Chairman Morrell himself, and several of

NAZARRI

CEDRINO

CHEVROLET

SARTORI

Digitized by Google

KEENE CAMPBELL SISZ

the foreign drivers. The uniform fine has been $25.

Some nasty stories have been brought to Chairman Morrell of obstructions encountered on the track. In view of them he will have the course patrolled the entire night before the race. The deputies and spectators will protect the circuit on the day of the race.

Caillois, who finished second to Thery in the Bennett cup race, cables that he will reach here the night before the race and asks for an automobile to meet him at the dock to hurry him to the course.

After all, Webb Jay will not see the race. He will be moved from the hospital to the Iroquois hotel tomorrow, where he will remain for a week before returning to Cleveland. It was hard to persuade him that the journey and excitement of the race would be too risky a venture for him.

SKETCH OF THE DRIVERS

Of the twenty men named in this year's Vanderbilt cup race, only four of them started in the initial event—Campbell, Tracy, Lytle and Sartori. Seven of the twenty drove in the Bennett this year—Jenatzy, Duray, Dingley, Lancia, Tracy, Nazzari and Lytle.

Jenatzy, billed to lead off, won the Bennett 2 years ago and was second to Thery in Germany in 1904. He is a Belgian and an electrical engineer by profession. He is the veteran of the crowd, having been one of the five competitors in the first Bennett. He has the reputation for being a daring driver, ever ready to take a chance in order to win. He drives a Mercedes.

Duray, of the French team, in a De Dietrich, will chase Jenatzy down the long, yellow road on Long Island and will be one of the favorites, because of his showing in European road races this year. He finished sixth in the Bennett, third in the French trials, seventh in the Ardennes circuit and second in the Florio. He is also famous as a record-breaker.

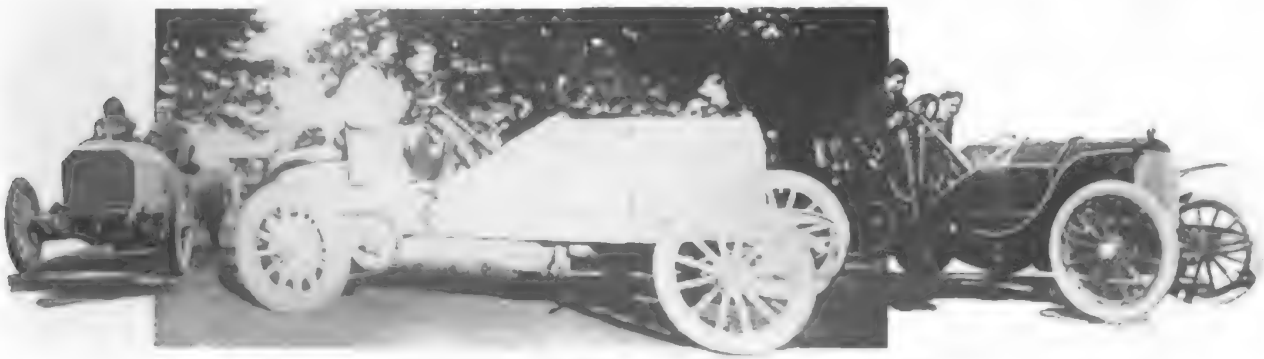
Dingley, in a Pope-Toledo, starts third and is the first American off. His win in the trial last month was his greatest motoring achievement, for he failed to finish in the Bennett. He is a Californian and gained his reputation by driving a 24-horsepower Pope car a mile in 1 minute ⅗ seconds in competition.

Lancia, in a Fiat, fourth to start and the leader of the Italian team, was famous only as a successful driver in touring events, up to last year, made his reputation by his showing in this year's Bennett, in which he threatened to beat Thery, leading the latter at one time, but being put out by a radiator accident. He was also a competitor in the 1904 Bennett, finishing eighth. Lancia ran third in the Florio.

Foxhall Keene, general all around sportsman, equally good at golf, polo or any other sport he takes up, had the supposedly unlucky number, 13. He is an American, although driving a car for Germany. He started in the Bennett race a few years ago, and is a careful and skilled motorist. He drives a Mercedes and starts fifth.

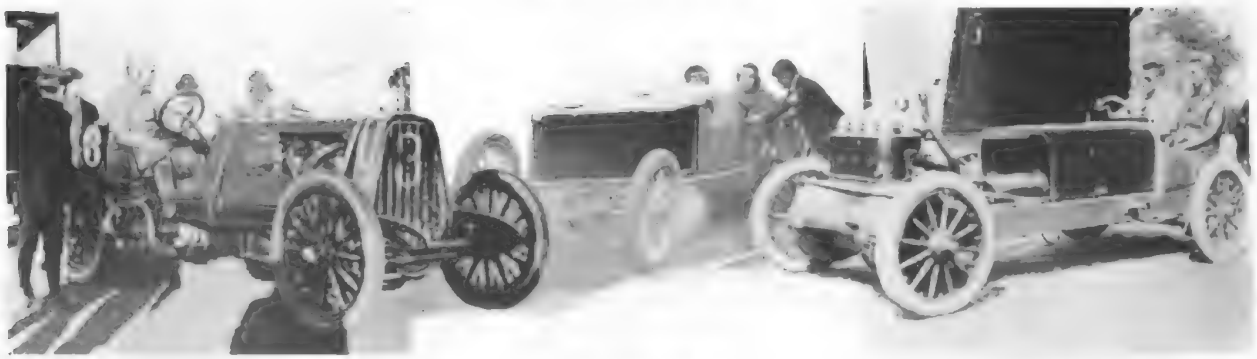
Wagner, sixth to start, is one of the French representatives who failed to qualify in the French eliminating trials, but who got on France's Vanderbilt team through the scratching of Thery and Caillois. Wagner finished fourth in the trials, just missing a place in the big race. He also started in the Ardennes circuit race, landing fourth money, while in the Florio cup race he finished eighth. He is in a Darracq.

Tracy, seventh to start, was runner up to Dingley in the trial. Tracy gained his technical education as an apprentice in British railroad engine shops and in 1898 built a gasoline motor of his own, while employed as an engineer in a New York apartment house. He drove the Bennett Peerless racer 1 mile in 55⅘ seconds at Ormond in January, 1904. He also took part in the Cuban road race last year, fin-



THREE OF THE GERMAN TEAM, JENATZY, KEENE AND CAMPBELL, IN MERCEDES MACHINES

Digitized by Google



DINGLEY'S POPE-TOLEDO THE WHITE STEAMER CHRISTIE'S FRONT-DRIVE

ishing second to Carricaburu, losing by only 30 seconds. His car is a Locomobile.

Nazzari, the Fiat Italian, who starts eighth, is renowned chiefly for the race he put up in this year's Bennett event, in which he finished second to Thery, beaten less than 17 minutes. He also competed in the Florio cup race, but sixth was the best he could get.

John B. Warden, Mercedes, starting ninth and representing Germany, is one of the two driving his own car. He is a man of international fame and in last year's Bennett drove a Mercedes car for Austria, dropping out in the third lap.

Sisz, Renault, who starts tenth, has not done much in road competition this year. He started in the French trial, but fifth was his fate in that event.

Christie, in a Christie, billed to leave eleventh, has made a great reputation for his Blue Flyer on the beach courses at Ormond and Cape May. So great was the confidence of the cup commission in his ability to make a showing with his car in the big race that he was unhesitatingly selected when the commission made up the team on its own accord.

Cedrino, in a Fiat, the Italian, No. 12 on the sheet, has done fairly well in track and beach competition in America this year. He has only been in the country a short time, coming here with an established reputation as a speed merchant on the other side.

Campbell, Mercedes, who gets away ninth, was substituted on the German team because of the withdrawal of Baron de Caters. Campbell was the first to start in the Vanderbilt last year, finishing fifth.

Heath, Panhard, starts fourteenth. He is the winner of the first Vanderbilt and since that victory has been out of the racing game. He comes out of his retirement in an effort to repeat his success of a year ago. Heath is an American by birth, but has resided in Europe for years.

Lytle, Pope-Toledo, fifteenth away, has the unique distinction of being the only American who ever finished a Bennett race. Lytle has been driving motor cars since 1895, when he handled a Duryea in the London to Brighton race, which he won. He also took part in Chicago and New York races the same year. He is driving one of the selected cars for America.

Chevrolet, No. 16, is inexperienced in road racing, but in the short time he has been before the American public as a track racer he has demonstrated his ability, having repeatedly beaten Barney Oldfield and having smashed the 1-mile record on the Morris park track. He is in as an Italian representative, being at the wheel of Major Miller's Fiat.

Hemery, No. 18, of the French team, in a Darracq, is one of the favorites because of his showing in the Ardennes circuit race, which he won from a crack field. He was also in the French trials, but finished ninth. He was picked to win the Florio cup, but Ruggio, Duray and Lancia slipped in ahead of him.

White, No. 19, is the last American to start. He will be at the wheel of the only steam car in the race, for which reason his work will be watched with interest. His only racing experience was in the American trial, in which he failed to finish. The commission, however, picked the White as one of the American team.

Sartori will start last and will represent Italy in the Fiat car nominated by the donor of the cup, A. G. Vanderbilt, Jr. Sartori was in last year's Vanderbilt, too, but one lap settled him. On the track Sartori has been a good man in his time, although now he is out of that branch of the sport.

GEORGE HEATH

FIRST VANDERBILT RACE

Since the running of the first Vanderbilt cup race there has come a new generation of motorists, enthusiasts all of them, but for the most part unfamiliar with America's great international road race. It is for the benefit of the recruits that MOTOR AGE delves into history and repeats what the majority of automobilists know, for few forget what happened one short year ago—how George Heath, representing France and driving a 90-horsepower Panhard, won the cup by such a narrow margin from Albert Clement, Jr., also a French team man, in a Clement-Bayard, that it was some little time before the real winner was known; how Herbert

HEMERY

DURAY

WAGNER

Digitized by Google

WHITE TRACY DINGLEY LYTLE

Lytle, in a little 24-horsepower Pope-Toledo, struggled gamely through the crowd which overran the course, and finished third, and all the other interesting incidents connected with this motoring demonstration over the Long Island roads. The four countries that will again strive for the cup Saturday—France, Germany, Italy and America—were represented in the first contest for the trophy, which is evidently destined to become fully as famous as is the America's cup in the yachting world.

Seventeen nominees started, the French team being made up of Gabriel, in a 90-horsepower de Dietrich; George Heath, in a 90-horsepower Panhard; M. G. Bernin, in a 90-horsepower Renault; Albert Clement, Jr., in a 90-horsepower Clement-Bayard; Tarte, in a 90-horsepower Panhard, and Teste, in a 90-horsepower Panhard. Representing Germany there were A. L. Campbell, in a 60-horsepower Mercedes; George Arents, Jr., in a 60-horsepower Mercedes; E. E. Hawley, in a 60-horsepower Mercedes, and William Luttgen, in a 60-horsepower Mercedes. Paul Sartori and William Wallace, both in 90-horsepower Fiats, representing Italy, while Joe Tracy, in a 30-horsepower Royal; A. C. Webb, in a 90-horsepower Pope-Toledo; H. H. Lytle, in a 24-horsepower Pope-Toledo; Charles Schmidt, in a 30-horsepower Packard, and Frank Croker, in a 75-horsepower Simplex, carried American colors in the Long Island affair.

Only two of the lot finished the entire 284.4 miles, Heath winning in 5 hours 26 minutes 45 seconds, averaging 52.2 miles

WALTER CHRISTIE

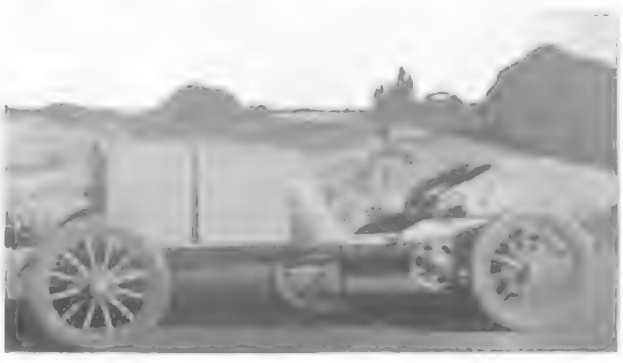
an hour, with Clement second in 5 hours 28 minutes 13 seconds, an average of 52 miles an hour. Lytle went 9 laps, or 255.96 miles, in 6 hours 24 minutes 20 seconds, an average of 40 miles an hour. Schmidt, another American, was fourth, doing eight laps, or 227.52 miles, in 5 hours 50 minutes 27 seconds, 39.1 miles an hour. Campbell was fifth, covering the same distance as Schmidt, in 6 hours 30 minutes 9 seconds—35 miles an hour. Tarte and Luttgen each went 199.08 miles, Gabriel and Croker 170.64 miles, Webb 142.2 miles, Hawley 113.76 miles, Teste 85.32 miles, and Bernin, Werner, Arents, Sartori, Tracy and Wallace 28.44 miles each.

Mishaps were numerous. Tarte's rear tire came off, Gabriel suffered from a broken pump connection, Bernin had a broken propeller shaft, Hawley a broken spring, Arents upset, his mechanic being killed; Werner jammed his brakes at a railroad crossing, Webb ran into a tree, Croker had tire troubles, Tracy was put out by a cracked cylinder, while Wallace and Sartori experienced clutch troubles.

Heath's fastest lap was at the rate of 67.8 miles an hour, Teste being credited with the fastest with a 71-mile average. The total number of miles, exclusive of controls, covered by the seventeen contestants who completed one lap or more, was 2,502.72, or an average of 147.22 miles per car at the general average pace of 39.5 miles an hour. The twelve European cars covered 1,677.96 miles, exclusive of controls, or an average of 139.83 miles per car, at the average rate of speed of 43.9 per hour. The five American cars did 824.76, or an average of 164.95 miles per car and at the average rate of speed of 28.7 miles per hour.

The eight European cars driven by European drivers covered 1,023.84 miles, or 127.98 miles per car; at the average rate of speed of 43.5 miles per hour. The four European cars, driven by American drivers, covered 654.12 miles, or 163.53 miles per car; at the average rate of speed of 44.9 miles per hour. The nine cars of all kinds driven by European drivers covered 1,251.36 miles, or 139.04 miles per car; at the average rate of speed of 43 miles per hour. The eight cars of all kinds driven by American drivers covered 1,251.36 miles, or 156.42 miles per car; at the average rate of speed of 35.4 miles per hour.

THE 90 HORSEPOWER POPE-TOLEDO LYTLE WILL DRIVE



JOE TRACY'S MOUNT, THE THOMAS 120-HORSEPOWER LOCOMOBILE

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office
American Publication
Bureau 58 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the
Trade Press Co·N H Van Sicklen
Manager·Telephone Harrison 4410

Member National Association of Automobile Manufacturers Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year·Foreign subscription four dollars
The Western News Co·of Chicago and its branches
supply newsdealers·Entered at the
Chicago postoffice as second class matter

AMERICA IN THE VANDERBILT CUP RACE

WHY have the foreign makers entered so many cars in the Vanderbilt cup race? From all that has been said of late respecting the Bennett and Vanderbilt trophies neither is particularly desired by the makers or the associations abroad, yet there must be some good reason for the expenditure of the amount of money needed to enter a team and carry it through a contest of such magnitude.

The fact is the foreign makers do not propose, if possible, to let it be said an American-made car won first or even second honors in its own race, much less in an event on the other side. The foreign makers are wrapped up in the idea that they have the best cars and the fastest cars, and they propose, cost what it may, to show to the effete easterners that America cannot build a car such as they would desire to own. There can be no other reasonable excuse for the entries of the foreign makes of cars other than pure advertising, in light of all that has been said about such contests within the past few weeks, and, this being so, what the foreigners propose to show is apparent.

It is conceded by most well informed people that a foreign car will win the Vanderbilt cup race, but it will not necessarily be because of better design or better mechanical work on the foreign cars; it will be a case of power alone, or possibly power and daring on the part of the drivers, for it must be conceded that in point of daring and experience the foreigners have a great lead on the American drivers.

But the winning of this big American automobile event will not show that American cars are not the equal of the foreign cars, and it will not prevent the American cars from going over the course at a good speed and in finishing in a most satisfactory condition. It will not prevent it being shown that American tires are such as will stand with any made abroad; further, it will not prevent the American drivers from showing that they know how to get their machines around such a course in good shape, which, after all, is the most important thing to be considered.

The American who will recall the last Vanderbilt race will remember how successfully two small-powered home-made cars navigated the course and finished without a scratch. It is true they were only third and fourth, respectively, but it is also true that they finished, while several foreign cars, of which much was expected, did not finish at all. Then and there did America begin to command the respect of other than its own makers and its own buyers. The demonstration, notwithstanding the absence of a popular win, was sufficient to boom the sale of American cars and to take a little edge off the sale of foreign-made cars, which had, however, made much of a showing in road competition.

American buyers of foreign machines have been led in their selection by speed and reliability shown in big road events, and just as soon as they realize that American machines can show equal reliability, combined with moderate speed, the luscious fruit will pass from foreign hands.

All the makers who entered cars in the Vanderbilt event did not hope to win even the eliminating trial, much less the final, in case their cars qualified. Most of these cars, however, made such a good showing as to prove the reliability of American-made cars.

This is what the race was designed to do. It has fulfilled its mission and the makers have fulfilled theirs. The American buying public has been shown what American cars can do, notwithstanding the fact that some cars were shut out of the big race by the arbitrary action of the cup commission. And there are just as good cars made in this country as those in the trial event, so that the buyer has a big field from which to select in making his purchase for next year.

No matter what may be the result of Saturday's race, American makers will have nothing for which to make apologies, unless it be in speed, and that is largely a matter of power. Power considered, the public may rest assured that America will not be lacking in its showing when the result of the race is known.

The American maker is in the position of having everything to gain and nothing to lose in such a competition; the foreigners are absolutely on the defensive. If an American car should win, it will come pretty near settling the foreign business in America; if the foreign car wins, it will be nothing more than was expected. The American makers are profiting by the race whichever way one may consider it, so that they have been more than justified in entering against the foreign giants—the pick of the world. After the years spent in developing the foreign racing car, the loss of this race will come as a severe blow, but with forethought worthy a prima donna, the foreigners have said this is their last.

The makers of American motor cars will regret any such action quite as much as will those interested in road speed contests simply for the sake of the sport they furnish. The American maker is grateful for the comparisons he has been enabled to make between his car and that of foreign manufacturer, and without the appearance of the foreign car in American contests he may be deprived of making such comparisons and of improving his manufacture as a result of such comparisons. He will, however, have the privilege of sending his car abroad to pit it against those entered in foreign competitions, and this will probably be the result, for it must not be supposed that an American will stop short of convincing the world that he is the equal if not the superior of any maker.

When the foreigner has left the American field of speed trials and the American maker attacks the foreigner on his own ground it will be all the more to the credit of the visitor should he succeed in wrenching from his adversary's grasp the honor for which the foreigner will fight to a finish. All in all, the outcome of this big event will prove profitable to the American in whatever light it may be seen.

DO SOMETHING; D—N IT, DO SOMETHING

AN American jurist, prominent during civil war days, had a son who had never showed tendencies to set the world afire; in fact, he was as near the ne'er do well class as he could be. His father was brilliant as a lawyer and one of the most prominent men of Lincoln's time. He had done everything to encourage his son to be something, but with poor success. Finally, becoming exasperated, he called the young man in and gave him a final talk, ending with this: "D—n it, do something—get drunk, if necessary—but do something."

Well might this advice be directed toward the automobile organizations, large and small, of this country. Winter turns into spring, spring into summer, summer into fall and fall into winter, and beyond hearing what will be done, the time for doing is still far, far in the future.

It would not require many columns of any paper to tell what the clubs and associations of this country have done for motoring during the past few years. The automobile orchard is filled to overflowing with ripe fruit, but the fruit is left to rot and to fall to the ground. With the exception of those directly interested, no one will deny this assertion.

Is all the work done? Have motorists received all they might receive? Are all laws reasonable? Are all roads improved? Are all benefits secured? Are all road crossings blessed with guide posts? Are all railroad crossings protected? Are all shipping rates fair? If the answer to these questions is yes, then why the automobile associations? If the answer is no, then why this state of somnambulance?

"D—n it, do something—get drunk, if necessary—but do something."

Digitized by Google

Jump Sparks

"Will the auto craze be merely a craze?" asks the Hub, a carriage paper. Will water become water?

Over across the pond they think motor boat racing a frost this year. America has a counter-claim in announcing airship racing a failure.

Megargel has had to use the cable to get him out of difficulties in Wyoming. But that's better than using the telegraph to wire for financial help, as some of the Clarences and Claudes do occasionally.

All those who finish behind the winner of the Vanderbilt cup race will find the little word "if" awfully handy in postmortemings to the newspapers after it is all over.

France declared herself just before the Bennett race and won it. Maybe she believes announcing she will not defend the Vanderbilt cup if she wins it will land that trophy for her, too.

What chance has the football player to gain any notoriety this week with the Giants and the Athletics playing for the baseball championship and the Vanderbilt cup race being run in the east? But football will be IT for the succeeding 30 days.

If there was a babel of voices and a confusion of tongues at the drawing of positions for starting in the Vanderbilt cup race, what may be expected at the finish of the race if America should happen to win the event?

Any motorist who has faced the glaring headlight on the front of an interurban street car will recognize the justice of the kick of his Pennsylvania brethren who want the street car companies to subdue the blinding shaft of light. They certainly want the glim doused.

In forcing the French makers to recognize the right of the English manufacturer to bid first for the business to be found in the United Kingdom by compelling them to exhibit at the Olympia show, John Bull has sort of put one over on his friend, the enemy across the channel.

Last Sunday the driver of a horse struck a match with which to light the lamps on his buggy. His horse became frightened at the flash, ran away, and the man's wife was killed. The only reason an automobile was not blamed for the accident was that no automobile was around at that moment. But it required an automobile and a chauffeur to stop the horse and save the other occupants of the rig, so count one for the automobile, anyway. Furthermore, the chauffeur proved so modest that he left without even making known his address or his identity.

T W

Final preparations made for running of Vanderbilt cup race Saturday; course is rerolled and fast times are reported to have been made; German team has redrawing because of Keene's objection to No. 13; Basle a doubtful starter.

W. H. Baker, general counsel of National Association of Automobile Dealers, tells of growth of body from seventy-five to 126 members; demands meeting with recognition.

Annual convention of Carriage Builders' National Association, held in Philadelphia, pays considerable attention to automobile industry.

Ballot for space at Olympia show, which opens in England November 17, held, there being 250 stall holders; France forced to exhibit.

Ford, Christie and Thomas cars already entered for Dewar cup race to be run on Coney Island boulevard, New York, next Wednesday.

Annual cross country run of Automobile Club of Philadelphia for Brazier cup won by G. P. Fletcher in a Packard.

Megargel, on his way west, encounters all sorts of difficulties in Bitter creek region of Wyoming.

England holds dust trials which prove nuisance is largely question of speed and dust.

Chronograph Club of Boston secures control of McMurtry timing system.

Entries already coming in for next year's Tourist trophy race.

Madam du Gast, the prominent European motorist, has not been heard from for a long time, having apparently dropped from sight for some unknown reason.

WHERE IS MADAM DU GAST?

Anyway, let's hope the winner of the Vanderbilt, whoever he is, is good to his folks.

What a nice lot of advertising the donor of a trophy receives! Only in the case of young Mr. Vanderbilt he neither needs nor desires it.

England has just held a set of trials to discover a way to lay the dust. Over here the average motorist is scratching under his bonnet to find a scheme to raise the dust.

Even if the Vanderbilt cup does go abroad there is consolation in the knowledge that the America's cup is apt to remain on these shores for some time to come.

Barney Oldfield has been forced to smash into paper fences in order to get his name into the public prints. Even this is forgotten, however, in all this excitement over the Vanderbilt cup race.

Those makers who announce that not for about a month will samples of their 1906 cars be ready for public inspection might be reminded that other makes are not only on view but are on the road in the hands of purchasers.

In the Minneapolis pack has been discovered a joker which thinks it funny to steal cars and scare the owners. When this joker is discovered some of the angry owners will make him look like a torn deuce.

Foxhall Keene balked at being awarded No. 13 in the Vanderbilt race, so a second drawing was had, the number going to Campbell. Another holler followed and so the Stevens Mercedes will carry a letter Y instead of 13. Of course, none of these drivers are superstitious—they just hate to take any chances on Providence.

Some insurance companies which undertook to knock automobiling because it was thought to be a dangerous pastime might show more forethought by encouraging automobiling and recklessness as an assistant business-getter. Insurance companies will need some help pretty soon if they receive a few more rippings up the back such as some have had of late.

Those carriage makers who held their annual convention in Philadelphia couldn't say too many nice things about the automobile. It is plainly evident that these gentlemen are far-seeing enough to know the side the oily, unctuous substance obtained from cream or milk by churning is applied to the article of food made from flour or meal by moistening, kneading and baking.

Digitized by Google

JUST LIKE AUTOMOBILE SHOW

Thirty-Third Annual Convention of Carriage Builders' National Association Recognizes Motor Car by Giving It and Its Accessories Prominent Part in Exhibition

Philadelphia, Pa., Oct. 9—The thirty-third annual convention of the Carriage Builders' National Association, in session here Tuesday, Wednesday and Thursday of last week, was chiefly remarkable for the part which the automobile played in its deliberations. Not alone in the papers read and the resulting discussions was the automobile feature prominent, but it was particularly evident in the exhibition of carriage and wagon-building accessories, which filled every inch of space of the big Second Regiment armory drill floor, the sessions of the association being held in one of the big company rooms on the Broad street front. The automobile feature was not allowed to overshadow the carriage in any respect, but the body builders who make and in a few instances exhibit tonneaus; the tire people, who slipped in a few solid and pneumatic automobile tires with the numerous reels of carriage tires; the paint and varnish men, who called attention to the enamels especially designed for motor vehicles; the leather and carriage trimming concerns, whose motor car upholsterings occupied prominent places on their booths; the lamp makers, who sprinkled a few automobile lamps among their other wares; the spring cushion manufacturers, who all prominently displayed tonneau and front seats of various shapes and thicknesses and prices in their exhibits; the makers of tops, whose exhibits and catalogues invariably included the extra-long article called for by the automobile—all helped to give the exhibition the appearance of a display of automobile accessories.

The Cleveland Hardware Co., with one of the largest and most comprehensive exhibits in the show, came out boldly and devoted the entire central section of its display to automobile irons. The Fitch Gear Co., of Rome, N. Y., bearded the lion in his den and bare-facedly exhibited a highly-polished carbureter on a velvet-covered table! And so on throughout the show. The deliberations of the association, which lasted 3 days, were punctured at intervals by references to the relations of the carriage builders to the automobile trade, and the growing necessity of the former cultivating the latter wherever possible, owing to the identity of the two trades, not only in the matter of business, but in the objects they are striving for, such as good roads, uniform freight rates, and other things.

In his address on the opening day, President W. W. Ogden, of Newark, N. J., in the course of his remarks stated the present conditions very plainly to the delegates. He said:

The motor car has rapidly come into prominence during the past decade, and is threatening to compete with the horse-drawn vehicle to a greater or less extent. That the automobile has for the past 2 years especially materially lessened the demand for high class pleasure carriages is admitted on all sides. The enthusiasm of the wealthy and leisure classes for this new form of recreation is general throughout our land and shows no signs of abatement, and the most pronounced opponents of this new claimant for the rights and privileges of the highways are beginning to admit that the automobile has come to stay. The carriage maker has already been called on by the engine builder to equip his motor with durable and luxurious bodies and to upholster and decorate them as long experience has enabled him to do in the production of the finest pleasure carriages, and those who have taken up this new branch of industry have found the demand constantly increasing. The repairs and renovations of all parts of a motor car, with the exception of the engine and driving gear, should be, and usually is done, in the carriage maker's shop.

It would seem, however, that as a rule the carriage trade has been slow to appreciate the advantage of getting in touch with this new and growing industry. The carriage maker and vendor is better equipped to handle every branch of this business, with the exception of the manufacturer of the engine and driving gear supported in its frame, than are enthusiasts without experience in the manufacture and sale of vehicles. In order to do it, they are obliged to equip salesrooms and plants at heavy expense, no better and oftentimes not so well adapted to the purpose as the plant which the carriage maker and vendor already possesses, and could use for this purpose without increased expense, and it would seem to be in the province and power of the carriage trade to share largely in this new industry. I bring this very important subject to your attention in a general way, believing that it will be a subject of debate and discussion in our business session.

The subject of technical education, always meriting our thoughtful consideration, will come before us at this meeting with new interest. The automobile industry demands a high order of skill in designing and constructing bodies and equipment that will endure the strain of high speed, and the vibration caused by engines of high power, combined with the greatest possible elimination of weight and the graceful outline, and luxurious upholstering, and harmonious colors that wealth and fashion are demanding and are willing to pay liberally for. Conference with gentlemen prominent in the National Association of Automobile Manufacturers leads me to believe that they are willing to join with us in enlarging and extending the work of our technical school, if we will provide a special course in designing and constructing automobile bodies, and make provision for a class to be instructed in the best methods of obtaining attractive and harmonious results in color schemes and upholstering. They may be found ready to contribute liberally to the support of our school if these features are provided for. I trust the suggestion will be considered and discussed in our deliberations.

The question of good roads is another important one that has been before us in the past. We have a powerful ally in the National Association of Automobile Manufacturers and the various automobile clubs that have been organized in the various part of the country. They are all enthusiastic and insistent in their demands for better public highways. They are ready and eager to unite with any and all organizations that will further this important work. I recommend that the matter be given due consideration. It might be thought wise that a committee of our association be given power to act with the organization I have alluded to, in securing action on the part of counties, states and the national government for the creation and betterment of public highways.

The report of the executive committee, which was read by Daniel T. Wilson, of New York, its chairman, still further enlarged upon the opportunities afforded the carriage trade by the necessities of the automobile builders. It said:

The advent of the automobile has gradually given to the carriage trade a needed expansion, which is now rapidly growing, and, if fostered, bids fair to add very largely to the total volume of business. Especially is this so with the builders of the highest grade of vehicles, where the expenditures for automobiles have curtailed the purchases of horse-drawn vehicles. By constantly catering to the special needs of automobile owners and encouraging the dealings between carriage builders and the users, as well as the chassis builders, there is no doubt the carriage trade will at last reach its greatest development and prove more profitable by making it possible to run the factories steadily throughout the year. Though seemingly an intricate and new industry, in reality it is no more difficult to make and supply the needed carriage parts than to make a horse-drawn vehicle, and we earnestly urge all to seek this trade—which cannot be properly handled by any but carriage builders. When the great demand is somewhat supplied, the business of both horse-drawn and motor-driven vehicles will supply a steady and satisfactory business, as it has already done in France.

In the same report attention is called to "the splendid work of education and real accomplishment that the automobile manufacturer and user have given to the cause of good roads, to the incalculable benefit of the nation."

The annual banquet, which was held in Horticultural hall, was a huge affair, over 600 covers being laid. Almost every speaker made some reference to the automobile and to the advisability of carriage and motor car builders laboring in unison to gain the ends which are so necessary to the success of each.

While no official action was taken on the report of President Ogden on the proposed coalition between the Carriage Builders' National Association and the National Association of Automobile Manufacturers looking to the establishment of a school for technical education in which the carriage men would be taught the secrets of the motor car makers, while they in turn would instruct their friendly rivals in the secrets of their art, the matter received considerable attention at the banquet. In private conversation the diners discussed the proposition in all its angles, most of them coinciding with President Ogden in his belief that it would be a good thing for all concerned. Taken all in all, this convention is bound to result in good all around. The carriage men have no animosity against the motor people, but show a disposition to put their shoulders to the wheel.

Among the 102 separate exhibits the following were more or less intimately identified with the automobile trade:

Tires and Rubber Accessories—Kokomo Rubber Co., Kokomo, Ind.; Sweet Tire & Rubber Co., Batavia, N. Y.; Hartford Rubber Works Co., Hartford, Conn.; Milwaukee Rubber Works Co., Cudahy, Wis.; Goodyear Tire & Rubber Co., Akron, O.; Consolidated Rubber Tire Co., Akron, O.; Republic Rubber Co., Youngstown, O.; Pennsylvania Rubber Co., Jeanette, Pa.; B. F. Goodrich Co., Akron, O.; Firestone Tire & Rubber Co., Akron, O.; Victor Rubber Co.; Stein Double Cushion Tire Co., Akron, O.

Automobile Leathers and Trimmings—Jacob Gerhab, Philadelphia; John F. Kelly Co., Newark, N. J.; Rutter & Turner, New York city; P. Reilly & Son, Newark, N. J.; Louis Dusenbury.; Fabrikord Co., Newburgh, N. Y.; George Stengel, Inc., Waverly Park, N. Y.; L. C. Chase & Co.; William H. Horstman & Co., Philadelphia; American Patent Leather Co., Newark, N. J.; E. F. Rogers & Co., Philadelphia.

Digitized by Google

Automobile Paints, Enamels, Etc.—Acme White Lead & Color Works, Detroit, Mich.; Sherwin-Williams Co.; Clarence Brooks & Co., Newark, N. J.

Automobile Spring Cushion Seats—National Spring & Wire Co., Albion, Mich.; D'Arcy Spring Co., Kalamazoo, Mich.; Jackson Cushion Spring Co., Jackson, Mich.; Novelty Tufting Machine Co., Chicago; Trenton Spring Mattress Co., Trenton, N. J.

Miscellaneous—Weston-Mott Co., Utica, N. Y., wheels; Rose Mfg. Co., lamps; Cleveland Hardware Co., Cleveland, O., automobile irons; Warner Storm Protector Co.; Fitch Gear Co.

Atlanta, Ga., was selected for next year's meeting of the association. A. G. Brunsman, of Cincinnati, O., was elected president.

TOURIST TROPHY AFTERMATH

London, Sept. 30—We are still enjoying the aftermath of the Tourist trophy race chiefly out of the mouths of those who did well in it, with disclaimers, dissents and disagreements from those who did not race at all. C. S. Rolls, who no doubt is well pleased, has given his conclusions to the press as follows:

"I see no reason why the Tourist trophy, if properly boomed, should not rival in importance—and even supplant—the Bennett race. Its superiority lies in the important fact that it encourages the production of a type of vehicle which is of interest to the buying public, instead of a more or less freak machine of inordinate horsepower, which is useless—and may be most harmful for ordinary road work. In conclusion, I should add that, looking at the matter simply from the point of view of sport, I am entirely in favor of motor racing in every form, for I personally know of no better sport; but it is idle to suppose that manufacturers who spend thousands of pounds in building and entering for a race do so for the sport of the thing, and, secondly, this is, in my humble opinion, one instance in the history of the English people where the interests of sport do not coincide with the best interests of the movement as a whole."

The following entries have already been received for next year's race. The regulations will undergo a careful examination before they are issued: John S. Napier, Arrol-Johnston; A. Rawlinson, Darracq; A. Rawlinson, Darracq; C. S. Rolls, Rolls-Royce; C. S. Rolls, Rolls-Royce; C. S. Rolls, Minerva; T. B. Browne, James & Browne; C. Harman Wigan, Vinot & Deguingand; D. Citroen, Minerva; Captain W. H. Bennett, Dixi; Cyril C. Maudslay, Maudslay; John S. Napier, Arrol-Johnston; R. Dennis, Dennis; R. Dennis, Dennis; Harry Smith.

EMPIRE REGISTRATIONS GROW

Albany, N. Y., Oct. 7—During the month of September there were 480 cars registered with the secretary of state, which makes the total number registered close to 23,000. The makes of machines leading in the returns were: Cadillac, 45; Pope, 22; Rambler, 20; Oldsmobile, 19; Autocar, 18; Ford, 17; Maxwell, 16; White, 15; Winton, 15; Locomobile, 14; Reo, 14, and Franklin, 11. The leaders among foreign cars were: Panhard, 14; Rochet-Schneider, 13; Renault, 9; Mercedes, 9; Bollee, 6.

FRANCE HAS TO SHOW

John Bull Forces Rival to Take Space in Olympia Exhibition, First of Winter

London, Sept. 30—The final ballot for space at the Olympia show, which opens on Friday, November 17, has been held, and the full list of exhibitors discloses that there are 250 stall holders. Of these 140 are exhibitors of motor cars, thirty-five of which will exhibit French and other continental models. When the Society of British Motor Manufacturers and Traders decided to alter its Olympia show date from February to November, with the avowed object of antedating and so anticipating the Paris motor exhibition, not a few skeptics ridiculed the idea that the Olympia show could possibly have any serious ambitions of rivalling the magnificent display which the French trade annually provided in the Champs Elysees. But the men who proposed to make this not merely an ambition, but a reality, knew better than their critics the conditions under which the whole situation was being moulded. They were neither deceived by the apparent calm with which the French show promoters received the challenge nor disturbed by the derision of critics on their own side of the straits of Dover. They gave it as their opinion that the French and German firms who were working the British market would either have to come over and help to make the Olympia show a spectacular as well as a trading rival to the Paris show or would hand over their British customers to the prior influence of the Olympia show salesmen. The French trade replied in effect and by deputy that their new models would first appear at their own show, which would always continue to attract all foreign buyers as the leading automobile exposition of the world, supported by the trade leaders of every country. That was either bluff or miscalculation, or both. It did not need the all too suggestive statistics of George Prade to prepare the British trade for a change of French trade policy on the subject, for they knew, through the London concessionaires of the leading French concerns, who were prospective exhibitors at Olympia, that they would have 1906 models on view or none at all. As events have now shown, the commercial strategy of the British trade leaders has been wholly successful. Placed on the horns of a dilemma, the French trade has sacrificed dignity to profit, as most people expected that it would do when it came to a showdown.

The 1906 models of Panhard & Levassor, Mors, Richard-Brasier, Gladiator, de Dion, Clement, Talbot, Darracq, Vinot & Deguingand, Berliet, Brouhot, Aster, Germain, Martini, de Dietrich, Peugeot, Minerva, Mercedes, Fiat, Itala, etc., are all promised for the opening of the Olympia show. In this way it receives, somewhat unwillingly no doubt, the cachet for which the British trade has been finessing, and as if to emphasize its victory only one English car firm has officially applied for and obtained space at the Paris salon—Humber & Co., of Nottingham. It is confidently expected that the trading results of Olympia will be such that the French trade will bring forward its show date so as to anticipate Olympia and so the sparring for wind between the two shows will probably prevent an early declaration of dates on either side.

It is, however, quite evident that the Olympia building is entirely inadequate to the consolidated requirements of the British trade and so proposals are on foot to split it into two or possibly three exhibitions, spread over the winter season from early November to early March. The first show would be devoted to pleasure vehicles, so that the continental makers might not draw away British buyers and could themselves have greater show facilities at Olympia. The second would be an industrial and marine motor show and the final a sort of retailers' mart for those who consider that the most suitable time for a motor show is when people are about to restart active motoring—for it is not an all-the-year-round-pastime here.

FOOLISH SORT OF JOKING

Minneapolis, Minn., Oct. 9—Automobile thieves and practical jokers are making life a burden for owners of cars in Minneapolis and St. Paul this fall. During the past month nearly a dozen machines have disappeared from the streets, or have been taken from the private garage of owners, either by thieves or by friends who sought to scare the owner of the car. The most notable disappearance was that of the 50-horsepower Thomas Flyer belonging to C. R. Lamb, of Minneapolis. The car was taken from in front of the Orpheum theater during the evening performance, and Mr. Lamb has been unable to locate it. Police officials of all cities in Minnesota were sent a description of the car, and the first result was the arrest of a Minneapolis dealer who was on his way to North Dakota to deliver a Model car. The dealer, after some trouble, was released. Many of the cars which have been taken have been later found at the outskirts of the city, much the worse for a hard drive. Asa Paine, racing secretary of the Minneapolis club; A. C. Bennett, Northwestern agent for the Winton, and others declare that the machines are taken by practical jokers, who wish to scare the owners. The police have taken the matter in hand, however, and practical joking in that line is expected to be at a discount from now on.

WILL EXCHANGE PRIVILEGES

New York, Oct. 5—Following today's meeting of the directors of the American Automobile Association, announcement was made of the conclusion of arrangements for reciprocal exchange of privileges and use of the touring information bureaus by members of the Touring Club of France, the Automobile Club of Great Britain, the Motor Club of Belgium and the American Automobile Association. The A. A. A. will also have an especially appointed consul in Paris to give touring information to touring members. It is expected that later the German Automobile Club will become a party to the quasi-union.

Digitized by Google

FIGHTS HIS WAY WEST

Megargel Runs Into Many Difficulties Crossing Wyoming Ditches and Gulches

Arco, Idaho, Oct. 11—Special telegram—The Reo Mountaineer arrived here last night and left for Hailey this morning. We were lost in the desert Sunday in a heavy snow storm and arrived at Pocatello nearly frozen. The weather was milder today. There is thick ice every morning and snow on all the mountain tops. The Reo Mountaineer, after some very severe mountain climbing, during which it certainly made good its name, pulled into Montpelier last Thursday night. During the last days on the road it had been mountaineering from morning until night, last night having been spent at Diamondville, Wyo., one of the highest towns in the Rockies.

Rain that held us up at Bitter Creek for 4 days played havoc with the trail all the way across the state of Wyoming. Huge gulleys or gulches, as they are called here, were washed across the trail, averaging several to the mile. Some of these gulches, directly across our path, were some 20 to 30 feet deep, and we had to shovel a road down their sides and up again, generally making use of the cable to haul the Reo Mountaineer up the almost perpendicular sidewalls. The Reo Mountaineer was the first vehicle to tackle the trail after the rain, passing freighters and emigrants at every station, waiting for the roads to improve before setting out again. At one point we thought we were stuck, for a chasm opened up entirely across the road, some 20 feet deep and about 5 feet wide. After shoveling dirt into this hole for some 2 hours without any visible effect, we drove over to the Union Pacific tracks, 2 miles away, and brought two of the widest ties we could find to the hole. Placing these across the gulch, we cautiously drove the Reo over on the ties. I'll bet it will keep some of the freighters and emigrant outfits guessing how they can get their wagons and horses across this hole without bridging the entire chasm.

Bitter creek is a little stream, naturally—so small, in fact, that I've often wondered how it received a place on the map of Wyoming. We drove the Mountaineer across it just east of the Bitter Creek station on the Union Pacific line, the water in the creek at that point being some 3 inches deep. That night it rained and when we attempted to recross the creek at a point some 6 miles below the station known as Point-of-Rocks, we found quite a different proposition before us. The little creek that we had begrudged a place on the map was then a howling torrent, rushing down between its clay banks, tearing them apart and gouging them out until where an almost dry ford had been the day before some 9 feet of water crossed the trail and barred further progress.

I attempted with hip boots to see how deep it was. A diver's suit would have been more appropriate, I found out a few seconds later as I emerged, dripping wet, after one of the hardest swims in my career. We did find a point where we could jump across, but I'll wager the water at that point, which was only 6 or 7 feet wide, was at least 12 feet deep, and the point where we jumped across was inaccessable for automobiling, even had we been able to bridge the stream. There was nothing to do but camp out on the side of the stream and wait for the water to go down, which we did with the best possible grace, eventually crossing with our cable and windlass in 3 feet of water.

While we have used our cable and windlass several times, we have always managed to attach the end of the cable to a friendly tree, telephone pole or fence post. This was not the case one day last week, and we had to go through the operation of planting a dead man, as it is called in the west. This consists of sinking a piece of timber or bunch of sticks across the road and attaching the cable to the middle, digging a narrow trench for the cable to run in. Fassett dug the grave and didn't get it deep enough, consequently Mr. Dead Man came to life after we had taken a few turns on the windlass. In fact, he came back at us as though he was angry at the idea of being planted. A deeper grave settled him all right and the Reo Mountaineer was soon drawn from an almost bottomless gulch to the top of the embankment.

CAMPING IN A DESERT

SAMPLE OF GRADES ENCOUNTERED BY MEGARGEL

Towns are very scarce in Wyoming and we loaded up with gasoline at Rawlins, carrying enough, we thought, for the 125-mile stretch to Rock Springs. We, however, hadn't figured on the deep sand, gulches to climb and week's layup for low water at Bitter creek, so our tank gave out, with Rock Springs within sight.

All through Wyoming we had to put up at railroad section houses on the Union Pacific line and our meals were composed of canned goods, even the milk being condensed, for no animal can live on the desert tracks, without railroading hay and grain in from some distant point. Now we are in Idaho and there is green grass to be seen once more, for everybody is irrigating and we have irrigation ditches to cross and recross all day. The improvement in the fare, however, is ample compensation for our trouble in this respect. As we are figuring now, it will be about October 15 when we arrive at Portland and some 12 or 15 days later when the Reo Mountaineer gets into San Francisco. There is grave doubts of our getting across the Sierra Nevada mountains before the heavy winter snows set in, but we are going to attempt it at any rate and trust to be back in New York before the first of the year.—PERCY F. MEGARGEL.

LOSING FIGHT BY STURMEY

London, Sept. 30—The Duryea Power Carriage Co., of Coventry, appears to be in a rather bad way. Henry Sturmey, who was the founder of the Autocar newspaper and the father of the British automobile press, has fought a long and a gallant fight for Charles Duryea's car on this side, but he has been beaten to his knees and now appeals through the medium of a letter to one of the financial papers for financial aid to carry on the venture. The story of the British Duryea car is an object lesson in the folly of endeavoring to educate the public. It is at least 6 years since Henry Sturmey determined to abandon all else and push the Duryea car. It was even then a novel design on this side, but it has since became unique. The public here did not take too kindly at any time to the horizontal engine, principally because of its comparative inaccessibility; but the Duryea fared even worse than the other cars marketed with that type of engines. At any rate the commercial progress was so slow that Henry Sturmey considered that it must be due to the prejudice against its foreign construction. He accordingly started to manufacture it in Coventry. He invested all his own capital in laying down the plant and buildings for the purpose of getting the assistance of the big engineering firm of Williams & Robinson of Rugby for parts too havy for his own works. The car has shown up well wherever it has been put into speed competitions and Sturmey has kept it fairly well before the automobile public. But after less than 2 years' trading with the British-built Duryea, the company he founded went into voluntary liquidation with a view to reconstruction. But apparently the proposed reconstruction has not eventuated, hence his present appeal. He asks for any sum from $25,000 to $250,000 and offers as an inducement figures showing the probability of an output of 200 cars per annum. That seems a modest ambition, but it is very doubtful if the appeal will secure the desired result. The constructional side of the motor car indus-

Digitized by Google

try does not seem to attract British investors, although the situation is not quite as bad as it was some short time ago.

The English Duryea car has had considerable success in many countries where it has been used, particularly in the Orient, where a considerable number has been sold. In Japan there are many Duryeas and nothing but praise has come from their owners, so its failure to catch on is attributable to lack of style rather than to mechanical defects.

DUST TRIALS IN ENGLAND

London, Sept. 30—The Automobile Club of Great Britain and Ireland dust trials on the London to Bath road, near Maidenhead, last Saturday have not gone far to aid interests in the manner hoped. The conditions for testing were suitable, a fine stretch of deep natural dust being secured, along which ordinary traffic was also passing as well as the baker's dozen of cars impressed into the club's service. All but one of these were ordinary touring vehicles, ranging in power from the single-cylinder 6 horsepower to the four-cylinder 25 horsepower. One car had special attachments to wheels and under the frame intended to demonstrate that the dust could be prevented from rising, but results did not justify that sanguine view. What was indicated and clearly was that the dust nuisance is largely a matter of speed—and dust. At 15 miles per hour the passing cars did not cause sufficient dust disturbance to make it at all objectionable. At 20 it began to be so, but at 25 miles per hour all the cars threw up dense clouds. In this particular the motorists have furnished some evidence against their own contention that it is imperative that the system of road surfacing now pursued is obsolete and must be amended in the interests of progress. Fifteen miles an hour is a funeral pace for a big-powered motor car driver, but as an alternative to a long and costly alteration of the main roads of the country it is to be feared that everybody else will consider the problem one easy of solution, especially as it will furnish one more reason why motorists should not be allowed to drive at any pace in excess of 20 miles an hour.

GETS M'MURTRY TIMER

Boston, Mass., Oct. 10—The Chronograph Club of Boston has secured the sole and exclusive right to use the McMurtry timing apparatus, which proved so successful at the last Ormond meet, and which has met with the approval of all interested in the accurate timing of motor contests. Mr. McMurtry was in Boston recently and concluded negotiations with President John C. Kerrison which was commenced over a year ago. The club has agreed that the apparatus shall be used only at sanctioned meets, while on the other hand Mr. McMurtry has entered into contract that the apparatus shall be used only with the consent of the local club, and when operated by himself or others delegated by the Boston organization. It is not generally well known, but it is a fact that Mr. McMurtry is the only honorary member of this 12-year-old club.

ODD RACE OF QUAKERS

Fletcher, in Packard, Wins Cross-Country Run of Philadelphia Automobile Club

Philadelphia, Pa., Oct. 9—The annual cross-country run of the Automobile Club of Philadelphia for the Brazier cup was run off last Saturday over a course 109½ miles in length, and was won by G. P. Fletcher, who drove his 28-horsepower Packard over the route in 5 hours 1 minute. There were nine starters, and of these six finished. The course was a four-legged one, with checking points at each corner—at Newton, Norristown, Wilmington and the club house. The affair was a handicap and 5 minutes was allowed to elapse between starts. The first car sent away was Horace Allen's 4-horsepower Oldsmobile, at 8:15 a. m. One hour was allowed the contestants for luncheon, which could be taken anywhere along the route. Although Fletcher has won the cup beyond possibility of a doubt, one of the rules of the run is that none of the contestants shall be warned or apprehended for fast driving under penalty of disqualification. Until reports have been received from every point along the course, the runs and tours committee, which has charge of the event, will reserve its decision. One of the contestants, William Longatreth, driving a 16-horsepower Maxwell, was unfortunate enough to be thrown out of the race for breaking the speed ordinance near Norristown. Two others—E. L. Hawkins, in a 10-horsepower Autocar, and Horace Allen, in a 4-horsepower Oldsmobile—met with accidents near the same place and were compelled to abandon the run. Fletcher, who started at 8:50—next to last—swung into the lead on the next to the last leg, and reached Wilmington, the last checking point, 23 minutes ahead of the second man.

No definite route was laid down for the contestants to follow, the only requirement being that their time cards should be signed by the umpire stationed at each corner of the course. The roads were in fair condition and the weather glorious. The six contestants finished in the following order:

Name	H.P.	Car	Correct time
G. P. Fletcher	28	Packard	5:01:00
J. R. Seeds	15-20	Locomobile	5:41:30
C. W. Kelsey	8	Maxwell	6:04:00
W. M. Swain	24	Winton	6:28:00
C. J. Swain	40-50	Winton	6:42:30
Allan Nood, III	4	Oldsmobile	7:41:30

As usual on the annual race day, there was a smoker in the evening at the club house, at which upwards of 200 members and their friends were present.

NEW TRADE PRACTICE

Buffalo, N. Y., Oct. 7—Swapping automobiles may become as common a practice as hoss-trading used to be if the practices of some Buffalo dealers are followed by others. Comus Penney, who recently became a member of the Jaynes Automobile Co., started out the other day for a drive to Lockport. When about half way to the lock city he met William A. Heacock, of Lockport, driving toward Buffalo. Heacock knew Penney slightly and knew that he had gone into the automobile business. So he took a chance that Penney might be willing to make a trade. They dickered for a time and finally the deal ended with Penney driving back to Buffalo in the machine in which Heacock had started out, while Heacock returned home with a new car. Not to be outdone in respect to quick deals, Ralph Butler, of the Jaynes company's force, started out yesterday to drive to his home in East Aurora. On the way he met Dr. B. D. Shedd, of Arcade, who was driving to Buffalo. The two exchanged greetings and soon dropped into discussion of the merits of their respective cars. Butler telephoned the Jaynes office this evening that he had made a trade with Shedd and the terms he got were approved.

TRADE ASSOCIATION GROWS

New York, Oct. 6—W. H. Baker, general counsel of the National Association of Automobile Dealers, called at the MOTOR AGE eastern office today. In the course of a lengthy conversation on the progress and objects of the association he said: "In the past month our membership has increased from seventy-five to 125, which includes only dealers of recognized standing. We believe that the future prosperity of the business and proper restriction of production will lie largely with such an organization as ours, providing it be properly conducted. We are asking the coöperation of the manufacturers in the creation of a reliable distributing body. Our demands are meeting with recognition. They are not unreasonable. We ask for the prepayment of freight charges, the complete equipment of cars with the sundries necessary to run them and the omission of equipment that belongs more properly to the agent to sell, a rearrangement of the discounts on the basis of business done and the type of car, a more reasonable price for demonstrating cars, a cutting off of discounts to owners banding together to get wholesale discount, and that the smaller dealers be compelled to take subagencies from the larger dealers. We demand of the tire companies that they leave to us the selling of tires. We want makers to be bound to make the deliveries they contract for and that the dealer in return be compelled to accept all cars for which he may have contracted. Makers are becoming convinced that what we ask is reasonable and that we are factors in their business, worthy of help and encouragement."

DEWAR RACE NEXT WEEK

New York, Oct. 11—The entries of the Ford, Christie and Thomas cars and at least one of the Darracqs is assured for the Dewar cup race, which will be run over the trotting speedway mile on the Coney Island boulevard next Wednesday morning. The Fiat directors are to discuss today making an entry. Charles Heineman is willing to start the Ross steamer, the holder of the cup, if a driver can be found for it. Joe Nelson is under consideration. When the Vanderbilt race is over it is expected that the European cracks will be ready to consider competition for the cup. They are too busy now to talk anything but Vanderbilt race.

Digitized by Google

The Realm of the Commercial Car

An Atlantic Coast Motor Tally-Ho

SUMMER RESORT TALLY-HO

THE MOTOR Tally-Ho Co., of New York, is one of the leading concerns devoting its exclusive efforts to running pleasure automobiles between the many summer resorts in New Jersey and along the Atlantic coast. The observation cars used by the company are large sixteen to twenty-four passenger vehicles, provided with enclosed seating space or canopy tops, as the occasion demands. Two of the observation routes conducted by it are the Asbury Park route along the New Jersey coast and the other a run from Philadelphia through New Jersey to Atlantic City. The former route has been used since 1904, but the latter is new, it being scarcely a month since the first car commenced regular trips. To be abreast with the times and make the running of observation machines an all-the-year-round business the Motor Tally-Ho Co. operates its machines in the winter season in and around New Orleans and on the Florida routes, where the popularity of the big twenty-passenger machine is as great, if not more so, than along the better known northern shore points. The machines used on all of the routes are known as the Manhattans and are built by the Mack Bros. Motor Co., of Allentown, Pa.

Since the first placing of the first car at Asbury Park, a little more than a year ago, and the subsequent rushing of two others in response to the feverish message, "Send more cars as soon as possible; we can't handle the crowd!" the success of the Motor Tally-Ho Co. has been a surprise. Breakdowns were frequent in those early days at Asbury Park. They always came at the most unfortunate moment. Scores of people were often turned away after reluctantly receiving their money back; or, worse, stranded on a country road and ingloriously towed to their destination or sent home on the train. In spite of these drawbacks, however, the enterprise flourished; and during the short Asbury Park season of 6 weeks, the three cars, each holding from twelve to fourteen persons, carried no fewer than 5,518 summer visitors to Long Branch, Spring Lake, Sea Girt and Lakewood. This is a round trip of 45 miles, through wooded roads and farming lands; and gives an opportunity to such as desire it to inspect the estate of George Gould. The way back to Asbury Park runs through the deserted village of Allaire, a romantic spot, once the home of some 5,000 busy workmen and their families. Here was the Allaire Iron Works, which did an enormous business until the discovery of the Pennsylvania coal fields brought about the wholesale desertion of business and dwelling houses, which makes the village one of the show places of that region today.

Three hours are allowed for this Lakewood trip; this includes a rest of ½ hour; for although the cars have a maximum speed of from 30 to 35 miles an hour, it is not considered desirable, for purposes of observation, to go so fast. They average from 15 to 20 miles an hour on the regular trips, and there seems to have been no desire for more rapid motion on the part of the passengers. Charter parties have been an important feature of this season's work, and there were days when three and four cars were engaged in this way by persons preferring to ride with their friends rather than with strangers on the regular trips.

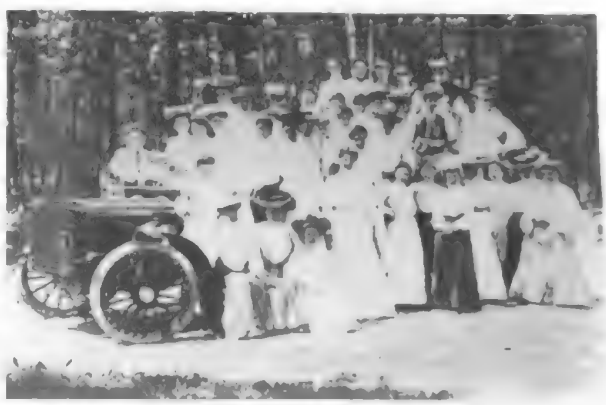
The cars have 60-horsepower motors, and carry fourteen people comfortably. They run smothly and can be relied on to make a long journey without mishap. The writer recently had the good fortune to take the 60-mile run from Philadelphia to Atlantic City, and on the following day the 100-mile trip from Atlantic City to Asbury Park. The performance of the cars on both occasions was admirable. They maintained an average speed of 15 miles an hour and ran through without a hitch of any kind. The ride from Atlantic City to Asbury Park was particularly enjoyable. The road nearly the entire distance lies along the coast; through cozy villages and thriving towns, where the leisure populace turns out in large numbers to view the big automobiles; past prosperous farms, and fragrant groves of pine and scrub oak. Then come the salt marshes, always a delight to the artistically constituted person. A stop is made at Toms river for dinner, where an excellent meal is to be had at a reasonable price. Thus rested and refreshed the remainder of the journey is accomplished without fatigue.

The president and general manager of the Motor Tally-Ho Co. is George H. Wright. Willis H. Heath is the treasurer. The main office is in the Flatiron building at Twenty-third street and Broadway, New York. The men who operate these large machines are selected with great care, and are necessarily intelligent and resourceful, both as drivers and mechanics. During 15 months of almost continuous running the company has not had an accident. By accident is meant any mishap that could place the lives of passengers in jeopardy for a single instant.

As to the operation of these cars, the management has furnished the following facts: The amount of gasoline consumed is ⅓ gallon per mile, and the average cost of operation, including work on repairs, 9⅓ cents per mile. This does not include the cost of duplicate parts, such as tires, which, by the way, are of solid rubber, since the weight of the machines is about 6,000 pounds. The tires are made by the Hartford Rubber Co., and are 4½ and 5-inch Turner Standard B, 36 inches outside diameter. The cars run on an average 110 miles each a day; the maximum distance covered by any one car in one day being 160 miles.

During the New Orleans season—from December to April—three cars ran 9,954 miles and carried 8,456 people, while this season in Asbury Park shows a record of 10,813 miles and 7,067 people carried. Directly on their return from New Orleans and before the opening of the Asbury Park season, they ran 5,131 miles and carried 7,320 passengers in Brooklyn.

The Cuba Motor Tally-Ho Co., an offshoot of this company, is now operating Manhattan cars similar to those used in Asbury Park between Havana and Gueries and also from Havana to Guanajag, as well as in the city of Matanzas. This company, which is under the management of C. E. Codd, has an order placed with the Mack Bros. for ten more cars of the same size and design, which they will place in Cienfuegos, Remedios and Caberien. They are also putting six 5-ton trucks on the road



A Motor Tally-Ho's Load

Digitized by Google

for handling pineapples and milk around Havana. Special freight carrying bodies necessary for such work are required, but in all other details the construction will be identical with that of the observation machine and the strength of all parts well proportioned.

After a week's operation, with the most delightful weather conditions imaginable, the new automobile stage line running between Philadelphia and Atlantic City has leaped into popularity at a bound, and places on the single car, the Manhattan, now running must be booked several days in advance. The time schedule calls for shoreward trips, starting from the Bellevue-Stratford in Philadelphia at 9:30 a. m. Tuesdays, Thursdays and Saturdays. Return trips are made on Mondays, Wednesdays and Fridays, starting from Hotel Chalfonte, Atlantic City, at the same hour. During the past week the car's full capacity of twenty passengers has always been taxed, with an overflow which must content itself with future bookings.

The Manhattan's frame is built of channel steel 5 inches deep, and the wheel base measures 12 feet, with wheels of the Sarven patent, 2-inch spokes, and equipped with 4½-inch solid Turner endless tires, which the Mack company, the builder, has decided best meets the requirements for heavy cars designed for passenger service. The springs are half-elliptic, of Swedish oil-tempered steel made especially to carry the load. The four-cylinder vertical motor has a 6-inch stroke, with a 5½-inch bore. The crank case is of aluminum, the saft itself being made of the best nickel steel. The valves, all on one side, are drop-forged nickel steel, both inlet and exhaust being of the same size and all interchangeable. The ignition is by the Remy jump-spark magneto, with dry cells for starting only.

The sliding gear transmission is of entirely new construction, with three speeds forward and reverse; the gears are made of chrome nickel steel, and the drive is direct on the high gear on the mainshaft. The bearings on the axle and countershaft are of the Timken roller type. The bearings on the transmission are made by the Hess-Bright Co., and are similar to those used on Mercedes, Panhard and many other large foreign touring cars. The carbureter is of the new Holley pattern, while the circulating pump, of the centrifugal type, is peculiar to the Mack cars and is made after the company's own designs. The force-feed oilers are mechanically operated. The clutch is of the conical type, leather covered, 17 inches in diameter and controlled with the regular French system; all foot levers and hand levers interlocking with the clutch. The differential, of the bevel gear type, has the countershaft riveted to master gears solidly enclosed. The chain is of the Whitney roller pattern, 1½-inch pitch. There is an emergency brake on each rear hub, besides two on the countershaft. The radiator is of the copper tube disk type, with fan for circulation, the bonnet being of steel with trimmings of brass.

The body is designed to carry twenty passengers—four on the front seat, five each on the second and third and six in the tonneau. The speed of the motor is normally 1,000 revolutions per minute, and at this rate the car is geared to do 18.7 miles per hour; this speed can be maintained with a full load over the generally level roads between Philadelphia and Atlantic City. A speed of 30 miles per hour is possible under the most favorable conditions, while on a 25 per cent grade 6 miles an hour can be made on the low gear; an 8 per cent grade can be taken on the high gear with twenty passengers aboard. The 24-gallon tank contains sufficient for a 120-mile run over ordinary country roads, it having been demonstrated that the fuel consumption averages just about 1 gallon for each 5 miles. The consumption of cylinder oil on the same basis will approximate ½ gallon and machine oil 1 quart.

One of the Cars as it Appears When Empty

During the past week a careful record has been kept of the operating cost, with the following result, on the 100-mile basis:

Gasoline, 20 gallons at 15c	$ 3.00
Cylinder oil and grease	.60
Wear of rubber tires, estimated at 2½c per mile	2.50
Housing, cleaning and care of car	2.00
Operator's wages, etc.	3.00
Total cost per 100 miles	$11.10

The Mack company, whose plant is located at Allentown, Pa., about 60 miles north of Philadelphia, has built fifty-one of these large gasoline passenger buses—thirty-four in the past 12 months—and all of them are still in operation. In addition to its passenger cars it has built and delivered several safe and brewery trucks, railroad cars and delivery wagons, besides separate engines for motor boats and automobiles.

GERMAN POSTAL PROGRESS

Germany leads all other countries in the use of motor wagons for covering postal routes in her great cities and for her leading postal routes in rural districts. This is due mostly to the poor railroad service given in many parts of the country. In these districts horse stages have been relied upon for years to deliver and collect the mails. The urgent calls for faster service, coming as they have from all parts of the country, have, however, led the postal authorities to make special tests with motor wagons. These tests have been under way for several months, until now the authorities, after reports made by their technical experts who followed the tests, have purchased a few machines for regular use.

The machines under test are not restricted to any form of power. Gasoline, alcohol and benzine motors, however, were preferred. Steam and electric machines were not discouraged. Of the three classes—gasoline, alcohol and benzine—perhaps alcohol was most favorably considered, partly because of the greater expense of gasoline and the home production of alcohol from vegetables, making it the cheapest and most convenient. Alcohol has been experimented with for a few years and now carbureters have been made for its use in which it offers no greater difficulties than ordinary gasoline.

The machine favored by the postal authorities and the latest to be purchased is an 8-horsepower N. A. G. motor van designed to carry a load of 3,300 pounds. Before making the final purchase a special test of 10 days was given the machine, in which it showed up to great advantage both in economy of fuel, load carrying and ease of control. The speed feature, being restricted to 12 miles per hour, did not enter largely into the test. The machine was manufactured at the factory of the Neue Automobil Gesellschaft, of Berlin, and is a regular stock chassis, fitted with specially made body answering the requirements of the postal department. The motor has two vertical cylinders mounted beneath a very short bonnet in front of the footboard, a cellular radiator forming the forward end of the bonnet. The fly wheel is practically beneath the forward part of the footboard. The sliding gear case is beneath the removable board of the footboard. Drive from the gear case is through a short shaft to the countershaft, on the ends of which are sprockets for double side chain drive. The braking system includes regular lever-applied emergency brakes on the rear hubs and pedal-applied ones on the drive shaft in the rear of the gear case. The steering wheel is on the top of a vertical column and carries on it spark and throttle control, as well as the change-speed lever, the only side lever being the emergency brake one.

The carrying compartment resembles a small undertaker's wagon with plain, tightly closed sides and a rear entrance. It is much higher than the head of the driver and the front end forms the back of the operator's seat. The body is made weather and fireproof, the latter used as an extra precaution. For work in rough districts sprags are dropped from the centers of the side pieces of the frame and can be raised or lowered at will from the seat. A further precaution is added in shoe brakes applied to the rear tires as well as the regular hub ones. The running gear is strongly made, being intended for heavy service and long life. Artillery wood wheels, the front ones of medium weight and the rear ones very heavily constructed, are used. On both are heavy solid rubber tires with smooth tread. The double rubber tire is being fitted to a few

Digitized by Google

NEW RECO TEN-PASSENGER MOTOR BUS

machines, but the pneumatic has been resolutely ruled against.

At the present time the Berlin authorities are also experimenting with a type of 3-wheel machine for use over light routes in the cities. The machine has a carrying capacity of 200 pounds and is propelled by a 3-horsepower motor. The carrying box is in front of the driver, who sits high and well to the rear, leaving the motor and carrying capacity well in front of him. Part of the work of these three-wheelers is the carrying of the mails from the main postoffice to the city branches. So great has been the success attending their use that the authorities hope to remove all horse vehicles and use the motors instead. This type of vehicle, while light in weight and cheap in maintenance, has good speed and carrying capacity.

MOTOR FIRE ENGINE

Will the large, cumbrous, rattling fire engine be replaced by small gasoline motors mounted on little two-wheel carriages that can be pulled along by a couple of men and taken in places where the big horse machines could never reach? This seems to be no pipe dream at the present moment, for an English factory has brought out its first little wonder in the shape of a single cylinder gasoline motor mounted vertically on the front of a cart, and behind it, and connected up, is a rotary pump with connection for rubber hose from the hydrants and other to the hose for conducting the water to the flames. The whole outfit is little higher than a small boy and is drawn by a pole with end cross-piece, which can be taken hold of by either two or four men and the motor drawn at a fast run to the scene of the fire. Where the blaze is on the ground floor and has not attained headway before the arrival of the miniature brigade, the little wonder can cope successfully with the fire, but where headway has been made little can be done. The scope of such a fire engine is in crowded parts of cities where they can be installed by private concerns, the cost of purchase being little and the method of operation as simple as a chemical engine. It would be possible for a firm of any standing to have one or more in its place and several employes capable of running it. The motor is an 8-horsepower de Dion, the weight of the outfit is 360 pounds, and it will throw a stream of water to a height of 59 feet. With the motor running at normal speed the discharge pressure is 90 pounds per square inch and the output 20 cubic meters per hour. As yet this motor fire engine has not come into general use, but those who have seen demonstrations of this useful little machine predict for it great possibilities when its practicability is generally understood by the property owners, whose interests it is designed to conserve.

AN ACME DEMONSTRATION

Carson, Pirie, Scott & Co., one of Chicago's largest retail merchandise houses, made a 3-day demonstration recently with an Acme delivery wagon. The machine used was the two-cylinder machine recently described in MOTOR AGE. On October 3, 4 and 5 the demonstration was made. On October 3 the first load left the store at 9:15 on the South Park route, carrying 108 packages. The assistant shipping clerk, a regular wagon driver, and package boy accompanied the car, in addition to the regular driver of the machine. The route of delivery covered that territory from Sixty-first street to Seventy-fifth street on the south, and Stony Island avenue to Wentworth avenue on the west. The entire load was delivered at 1:10 and the wagon had returned to the store at 1:45 for the second load, which left the store at 3 o'clock with thirty-seven packages, covering the same territory as the first load in the morning. The entire load was delivered and the car returned to the store at 6. On these two trips the amount of gasoline consumed was 7 gallons and ¼ pint of lubricating oil.

On October 4 it started from the store at 12:30 on the Oak Park route with 130 packages. It arrived at Oak Park at 1. The territory covered was Oak Park, Harlem, River Forest, from Twelfth street, to North avenue, on the north, and Austin avenue to the Desplaines river on the west. The delivery was made and the car returned to the store at 6:30. The amount of gasoline consumed was 6 gallons and ½ pint of lubricating oil.

On October 5 the first load left the store at 9:15 with 124 packages, on the northern trip, arriving at Devon and Evanston avenues, the first stop, at 10:15. The territory covered comprised that lying from Lake Michigan to Bennett avenue on the west, and from Devon avenue to Central avenue on the north. The complete delivery of the load was at 1:45. The second load started from the Evanston barn, Chicago avenue and Main street, at 4:20 with thirty-one packages, covering the same territory as the morning route. The delivery was completed at 5:45. The amount of gasoline consumed was 9 gallons, and 1 pint of lubricating oil. Time could have been saved in delivering the second load by the return of the machine to the store instead of the long wait made necessary in sending the parcels for the second load to Evanston by train, to be distributed from the Evanston barn. In all the gasoline used was 22 gallons, costing $2.31, and the lubricating oil 1¾ pints, costing 14 cents, or a total of $2.45. The total number of packages delivered was 480, and the mileage covered during 3 days' demonstration was 158 miles, at an average speed per hour of 9½ miles, which is considered good going.

GERMAN POSTAL TRICYCLE

NEW RECO BUS

The Reo Motor Car Co., of Lansing, Mich., with its usual energy has come to the front with a ten-passenger motor bus. Chassis construction is featured by the use of pressed steel side pieces, curving downward in front, where the spring hangers for the semi-elliptic springs are secured. The rear part of the frame is carried on full elliptic springs, radius rods extending from midway of the side pieces of the frame to the rear axle casing. Tubular axle construction is used and the axles run on roller bearings. The weight of the bus approximates, with canopy top, 1,700 pounds; the wheel base is 90 inches and the tread 55.

The power is supplied from a two-cylinder opposed motor of Reo construction, suspended lengthwise of the frame and with a bore and stroke of 4¾ by 6 inches, respectively, rated at 16 horsepower at normal speed. It is the 1906 motor of the Reo touring car. A special adjustable friction clutch serves to connect the gear with the crankshaft. Drive on the high speed is direct, the maximum speeds ranging between 18 and 24 miles per hour. Ignition is by jump spark, with current from either of two sets of dry battery. The gasoline and water supplies are 13 and 3½ gallons, respectively. The bus body is typical in with a central aisle and rear in every sense. The driver, with a couple of passengers, occupies the cross front seat and behind it are two facing side seats, with a central aisle and rear entrance.

Digitized by Google

COMMERCIAL STEPPING STONES

Better Than Trolley Line—The establishment of a motor bus line is talked of from the center of New Bedford, Mass., to Buttonwood park, one of its leading suburbs. An electric line has often been talked for over the same route, but the people have objected to the laying of the tracks along the streets.

Another Undertaker In—Syracuse, N. Y., undertakers are all lining up with motor propelled ambulances. Undertaker McCarthy uses a gasoline one and now a competitor, William P. Hart, has arranged for the installation of an electric one. Horse ambulances are used by the latter, but the field of the electric is for long runs. The vehicle will cost $3,000.

Another Railroad in Line—O. J. Collman, general manager of the Kansas Southern & Gulf Railroad, is responsible for the statement that as soon as the construction of the line is completed it will be equipped with gasoline motor cars for passenger service. Because of the high speed of the motor cars it will be possible to make four round trips each day between Blaine and Alma, the former in Pottawatomie and the latter in Wabaunsee county, Kansas.

Wideawake Boniface—The enterprising proprietor of the Marshall house, York Harbor, Me., owns a Knox bus for transferring passengers to and from the railroad depots. The wagon has facing side seats with center aisle and rear entrance. In warm weather a top of the folding variety is used, the sides, front and end being rolled up, but in wet weather, when down, it can be transformed into an enclosed car, with the large tarpaulin windows furnishing sufficient light for the passengers to read with ease on dull days, if they are so inclined. Travelers are much taken with the new line, one well known drummer giving vent to his approbation recently, remarked: "Good-bye Dobbin and welcome motor. The change has not come a minute too soon. Who wants to ride in a slow, shaking horse bus when a smooth-running, speedy automobile is better in every way?" The fares charged by the bus is not more than that with horse vehicles, but the

Scots Find Good Use for Motor Wagons

greater loads carried, faster time made and longer hours of daily use are the money savers in connection with them.

Is Now Consistent—The Pope Mfg. Co., of Hartford, Conn., in order to be consistent, as all automobile manufacturers should be, has commenced the use of automobiles in transporting goods between railroad depots and the factory. A light electric machine is used for carrying the lighter freight pieces and a big electric truck for the heavy parts.

Glasgow a Devotee—Glasgow, Scotland, not only believes in municipal ownership, but is also a devotee of the motor bus and motor wagon. The city corporation has recently purchased an Arrol-Johnston, 12-horsepower motor tower-wagon for repairing breaks in the overhead trolley wires. The motor is a two-cylinder one, working at 800 revolutions per minute. The gear box carries gears for four forward speeds and a reverse, with final drive by double side chains. The forward speeds range from 1 to 16 miles per hour. Noticeable features of the machine are roller bearings, phosphor bronze hubs for the road wheels, solid tires, irreversible steering gear, forced feed lubrication, and magneto ignition.

Use Steam Wagon—James B. Clow & Sons, Chicago, Ill., are using a Coultard steam wagon in delivering iron and tile piping from their yards to all parts of the city. The machine has a 30-horsepower motor and is capable of making 10 miles an hour with a heavy load. Two hundred gallons of water capacity is provided and coke furnishes the heat.

Has Regular Time Table—The bi-daily automobile service between the Bellevue-Stratford hotel, Philadelphia, and Atlantic City, N. J., has been started. Regular trips are made from Philadelphia on Tuesdays, Thursdays and Saturdays, leaving the hotel at 2 o'clock. The machines leave the Chalfonte hotel, Atlantic City, at the same hour on Mondays, Wednesdays and Fridays.

Making Demonstration—The Pardee-Ullmann Co., Chicago, distributors for the Packard car, has been making demonstrations with the Packard truck for several stock yard concerns within the last month. Swift & Co. were given a 5-day demonstration and the Anglo-American Packing and Provision Co. a 7-day trial. The truck was used in delivering meat to the companies' branches around the city.

Educates Operators—The London General Omnibus Co., of London, Eng., is wrestling bravely with the driver proposition by having all of its drivers take courses at the Battersea Polytechnic Institute. Relief days are provided each week, when the drivers take several hours off to attend instruction, pay being given for lesson periods. The company deserves praise for its determination to give the motor bus a fair deal by endeavoring to place it under the care of competent operators. The saving in the maintenance bill is being eagerly followed by the directors and already the direction in which the wind blows can be seen by the fewer breakdowns recorded and the diminishing of the number of accidents.

Lands Guests at the Hotel

A Maine Hotel Bus Line Meets Each Train

Digitized by Google

Motoring Honeymoon Tour of Father and Son

A Crowd Watched the Start from the Grand Hotel at Lyons

NO person can conceive of a more delightful wedding trip than that taken during the early summer by New York state's ex-lieutenant governor, Timothy L. Woodruff, and his bride, and his son, John W. Woodruff, and his bride. It is permitted to but few fortunate newly married couples to spend their honeymoon automobiling through France, Switzerland, Austria, Germany and Belgium, as did the Woodruffs, who took this beautiful trip just when everything was at its prettiest and the roads, always smooth, at their smoothest. Mr. Woodruff, while nominally a resident of Brooklyn, has a home in Syracuse, where he is president of the Smith-Premier Typewriter Co. and spends most of his time in that city when he is not mixed up in politics. The trip had been planned a long time before the Woodruffs were married. In fact the car, a Fiat, was especially built for them in Italy and shipped to France, where they met it. Mr. Woodruff had run a Fiat car about New York city and had decided that it was just the machine in which to make a tour through Europe. He sent his chauffeur, Candido Bastianello, an Italian, over ahead of the party to superintend the preparation of the machine and to get it thoroughly tested out preparatory to having it shipped to Paris. There was not a breakdown during the 27 days of the tour, in which something like 3,000 miles were covered at a good rattling pace. It was not the intention of the tourists to see how fast they could go, but rather to enjoy the beautiful scenery and to gain the rosy health which can only be secured by such a trip. The party would have taken much longer for the journey had not business engagements been pressing. A hot campaign in New York, too, required the presence of Mr. Woodruff. In public life Mr. Woodruff is the boss of Brooklyn, but in private life he is a plain, congenial gentleman. Before starting the story of the trip it might be well to tell how near he came to being president of the United States. He was a candidate for vice president the second time William McKinley was nominated for president. Owing to the insistence of the republican leaders that Theodore Roosevelt be sidetracked by forcing him to take the nomination, Mr. Woodruff was left out. What happened later is well known. President McKinley was assassinated and the vice president became president. Had not the leaders wanted Roosevelt out of the way, Mr. Woodruff might have been vice president and consequently president. Mr. Woodruff now has his eyes upon the governorship of the Empire state.

Shortly after the weddings, the Woodruffs sailed for England, having made all the preparations in advance for the car and for the details of the tour. Two delightful weeks previous to July 1 were spent in England, where the party was entertained by Sir Thomas Lipton, whose penchant for yacht racing has made his name famous in America. Mr. Woodruff had entertained the noted tea merchant at his lodge in the Adirondacks several times and a strong friendship had sprung up between them. Accordingly, as soon as Sir Thomas found out that the Woodruffs were in England, he made elaborate preparations to entertain them. He took

Repairing a Puncture

the party from London to Southampton, where his big yacht, Erin, was anchored and there the party remained for the next 3 nights, the days being spent in touring through southern England in Sir Thomas' 60-horsepower Daimler car. The famous New Forest and other trips in southern England were taken. The party found the roads as good as those traversed later in France, although they were narrower and dangerous on the turns. The weather was delightful and every member of the party thoroughly enjoyed the little side trips from Southampton. Sir Thomas proved to be a royal entertainer.

The Americans started for Paris about July 1 and here they were met by Candido, the chauffeur with the big Fiat car, which developed 43 horsepower. A temporary body had been placed on the car, the manufacturers finding it impossible to get out the finished product in time. It did nicely, however, for the trip and upon the completion of the tour the car was sent back for the permanent body and will be shipped to this country, where Mr. Woodruff will run it in New York. After doing Paris and taking in the points of interest

Motorists Sightseeing in the Alps of Switzerland

Digitized by Google

usually visited by tourists, a courier maid was engaged to go ahead with the trunks and to arrange for the hotel accommodations at the various stopping points. The first two days in France were spent in visiting the famous chateaus. One of the most famous of the chateaus visited was the Chateau Chambord, built by Francis I and one of the finest in France. On the way to Lyons the party took in the Bennett race. From Lyons the party went to Geneva and crossed the Alps of Switzerland, going over the highest mountain passes easily. Of this Mr. Woodruff says: "We crossed the Alps at a speed equal to if not in excess of that attained on a level in America, where the roads are a disgrace to our civilization. Too much cannot be said in praise of the European roads. Like a city pavement the roads are before you—smooth as asphalt. We traveled the roads built centuries ago, which are in just as good condition today as when they were first built. The secret is that they are properly maintained. What America must wake up to is to build good roads in the first place and then spend enough money on them to properly maintain them. We noticed with great interest the men whose

Shoveling Snow on the Jungfrau

duty it was to travel over the roads and to fill in the least bit of scratch, keeping them in absolute repair."

Mr. Woodruff, Jr., was the official photographer and succeeded in catching a characteristic snap-shot on the road from Bagas to Innsbruck. No inns being in the vicinity, the party enjoyed a meal in the open air. The two women and T. Woodruff, Sr., were on the ground, and the chauffeur was standing in the background. A strange picture was taken of the women of the party shoveling the snow of the Jungfrau. Mrs. John W. Woodruff wielded the shovel while Mrs. Timothy L. had her hand raised to throw a snowball at the camera artist. The sun was shining hot in the valleys, while on the heights the snow made the party think of winter.

En route from Austria to Berlin the party spent a day at Munich and after 3 days' sightseeing among such interesting places as Nuremberg, Rothenberg, Stuttgart, Baden-Baden, Heidelberg and Dahmstadt, reached Frankfort-on-the-Main. In Rothenberg the weather was decidedly frosty and the party had to bundle up as if in the dead of winter. Three and four

Woodruff Party Dressed for a Chilly Ride Out of Rothenberg

overcoats were necessary to keep warm. From Frankfort the party went to Berlin and from there to Cologne, thence to Brussels by the way of Leige.

"The run from Leige to Brussels," says Mr. Woodruff, "was over a Belgian block road. Over there a Belgian block road is a cobblestone road, while here it is really a block pavement. We reached Brussels at 3 o'clock in the morning, the only bad experience we had with either roads or car during the entire trip. Considering the good luck we had on the rest of the tour, it does not become me to say much about that little experience."

From Brussels the party journeyed back to Paris, having been gone 27 days and having covered 3,000 miles without accident. Plenty of tires were carried along and the machine was never seriously delayed on this account. It is interesting to note that during the trip the tires received fourteen punctures. While the tourists made no effort at speed, no car passed them during the entire trip. They saw many American tourists abroad taking advantage of the good roads and the beautiful scenery. Mr. Woodruff, Sr., since his return home, has been bemoaning his luck in having to cut short his honeymoon in this manner. The 27 days on the road passed all too quickly for the party, and the few discomforts they encountered in the way of tire troubles and cold weather in Rothenberg was more than made up to them by the grand roads they had to travel over and the magnificent scenery upon which they were permitted to feast their eyes. So delighted are the Woodruffs with the joys of automobile touring that it is more than probable that another summer will find them again hiking across the pond for more touring of this sort, or else go west in their own country and investigate the beauties of Yellowstone park and incidentally get a chance to compare the roads of America with the highways of Europe. Anyway, the Woodruffs enjoyed touring.

Picnic Lunch on Road from Pagasto

Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

GENERAL HINTS — Axle Seized—A dry wheel or axle bearing will sometimes begin to cut its metal surfaces and seize so tightly as to prevent turning. The first evidence is lessened speed and apparently lessened power. If the metal particles can get away promptly enough, the bearing simply wears out very rapidly. A stop should be made at once and oil applied, the thinner the better, which will probably stop further cutting. The bearing should be taken apart, all loose particles removed and the rough spots smoothed with a file. If hard spots are found projecting above the surface, they must be cut out with a chisel, if they are too hard for a file, as is sometimes the case. The same procedure applies to any other bearing, of course. Bearings should always be perceptibly loose; tight bearings give trouble.

BACK FIRING—This is of two kinds. Properly it means firing in the tube leading from the carbureter and is usually caused by a sluggish inlet valve, a very defective inlet valve seat, a spark occurring during the suction stroke or ignition during the suction stroke, either from some red hot part or from the exhaust of another cylinder through an open exhaust valve. Find and correct the cause. A premature explosion resulting in a backward kick is usually due to the spark too far advanced and should be called premature firing.

BUZZING OF THE COIL—The coil should buzz only when the spark is wanted, and constant buzzing indicates a short circuit. Its cause should be found at once, for it is an indication that the batteries are being damaged. If the coil does not buzz it indicates no current, either because of weak battery or broken wiring.

BAD BATTERY—Lack of vim is very frequently due to a weak spark and should be taken as an indication that a new battery is needed. Where batteries alone are used, two sets should always be carried and their condition tested by throwing in the other set frequently. After both sets have become weak, they may be used together and will give a considerably lengthened service. Some users carry twelve to sixteen cells at a time, using four at a time when fresh, eight at a time when older, and testing out the worst ones occasionally to be replaced by a set of four fresh cells. The 2½ by 6-inch cell can be found at most telephone stations and because of its great availability is really the best size to use. It is also lower in price and lower in weight, as compared with the service rendered, than the larger cell.

MISSING FIRE—Missing fire is evidence of a weak spark and these misfires are sometimes evidenced by explosions in the muffler. A faulty connection, a loose wire, a short circuit, a dirty vibrator may be responsible for bad results from a battery. Where but one set is used a few minutes rest will sometimes recuperate them enough to start the vehicle again. A single bad cell in a series will prevent proper action of the remainder and its removal will often permit the remaining cells to do the work. An ammeter is best for testing, although a voltmeter is often used.

BEARINGS — Plain bearings have been treated under the heading of axles. Ball and roller bearings will indicate the presence of some disturbing feature, such as a broken ball, by grinding or squeaking, and if very dry will, sometimes, grind when oil only is needed. About the motor lack of adjustment is usually indicated by pounding and while this is rarely serious when first heard, it should be remedied before it is allowed to become annoying, for constant pounding will, sooner or later, break a shaft or do some similar damage. Plenty of heavy oil will lessen, by filling the spaces, and pound may indicate a lack of oil.

BRAKE TROUBLES—These are usually indicated by failure of the brake to properly hold or by the brake surface seizing and holding too fiercely. In the former event one is liable to run into something through lack of control. In the latter the vehicle may be damaged by the sudden stoppage, to say nothing of the wearing out and destruction of the brake surfaces. Apply, in one instance, common chalk or dry earth to make the surfaces hold better, or adjust the brake, if needed. In the other instance, apply a little oil or graphite. Carefully inspect all operating parts to see that nothing prevents them from having proper movement to operate the brake. Worn or broken parts, of course, must be replaced promptly, for next to the ability to go, is the ability to stop when desired. It is not enough to know that the brake will hold properly in one direction, for it should be known also that it will hold in the other. Severe accidents have occurred through lack of this precaution. Sometimes one end of the band is greasy and the other end dry, which will explain such eccentricity. The grease can frequently be removed by washing with gasoline, but care should be taken that whatever is used does not get into other wearing surfaces, for gasoline, sand and dirt are as detrimental to bearing surfaces as they are advantageous to slipping brakes. It is not advisable to use resin, although this is common practice. Resin, when cold, grips fiercely, but as soon as warmed up it serves as a lubricant and is decidedly objectionable. It is also adhesive and a resined band will sometimes stick and refuse to let go, which, of course, stalls the motor and causes trouble. It is particularly objectionable on long hills, for a brake holding well at the top refuses to hold when it gets hot, leaving one a victim of misplaced confidence. Sometimes the brake lining is worn until the metal comes in contact, which, having less friction than the leather or fiber lining, refuses to hold, or the adjustment may be at its limit, so that the band cannot be actuated further in order to do its work. In these cases a new lining is required, but temporary service can be sometimes had by inserting visiting cards or similar filling behind the lining.

BUMPING—A sensation as of running over a small obstacle at frequent intervals, producing a decided bump, is usually evidence of a deflated tire, in which the air tube has crept and formed a knot at the valve tube. If the deflation is not noticed until the bump is felt, as frequently happens, the valve tube is likely to be torn nearly or quite off and the air tube almost sure to be damaged. Of course, there is nothing to do but repair or replace as promptly as possible. Instances have occurred where this irregularity has been felt, caused by a piece of wood with a nail in it, sticking to the tire. A tire shoe blowing out at one point becomes wider and apparently softer and produces much the same feeling when running fast.

NOISES—Under this heading may also come a variety of sounds arising from various causes. Premature ignition, loose bearings, loose distance rods, a small obstacle in sprocket or gears, or a broken, or a loose framework, permitting the engine to jump at intervals. Here, again, inspection is necessary and finding the trouble half the battle. When found, the obstacle can be removed, or the part adjusted. If caused by premature ignition, examine the lubrication, sparking, water circulation and fuel supply. Premature firing will sometimes occur, because of an over-rich mixture, and frequently occurs on hard pulls, like climbing a hill.

BROKEN CHAIN—Extra chain links are easily carried and should be kept in the vehicle. When a block chain is used, it is possible to repair a broken block by wrapping with wire and leaving the chain loose enough to pass over the sprocket. Sometimes a broken side link can also be repaired temporarily with a wrapping of wire, which will enable the user to reach his destination. In the absence of chain rivets a wire nail makes a fair substitute. In a roller chain, a wrapping of wire can replace a roller, but this is seldom necessary.

BROKEN SPRINGS—A broken carriage spring is not uncommon and while the average blacksmith cannot be depended upon for the best of tempering, he can usually weld a broken leaf so as to permit the journey to be continued. To get to the blacksmith shop it will usually be found possible to block up with stove wood, fence boards or anything else available, which permits slow, but safe, driving. Care should be taken after a spring is broken to avoid hard bumps, lest the axle be also damaged.

EDITOR'S NOTE—This is the twelfth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

Current Automobile Patents

LETTERS PATENT No. 800,647, dated October 3; to William A. Hatcher, of Cleveland, O.—The carbureter known as the Brew-Hatcher has a ball-valve controlled float chamber at one side with the mixture entering it from the bottom. To the side of this chamber is the mixing chamber with the air inlet passage in the bottom and the fuel pipe from the float chamber extending vertically through the center of the air chamber. Above the air chamber is a mixing chamber, the bottom of the mixing chamber being flap valves which separate it from the air chamber and the top of it formed by the throttle. The feature of the carbureter consists in the flap valves that separate the air and mixing chambers. The construction of these valves resembles the cutting of a pie into four pieces and hinging each piece at the outside, so that the center can be raised easily. In the center, however, is a small circular opening, in which is the needle valve for admitting gasoline with but a small air space surrounding it. As the motor speeds sufficient air cannot enter this opening and the flap valves are raised a little by motor suction and more air admitted. Each flap valve can be weighted to suit the requirements of the motor to which the carbureter is attached.

Letters patent No. 800,915, dated October 3; to Edward R. Hewitt, of New York—The invention relates to the carrying of a sub frame on the main frame of an automobile. The main frame is suspended on the four springs in the usual manner and the sub frame, on which is carried the motor and transmission, is carried on the side pieces of the main frame at four points, two points on each side piece of the main frame. Two of the points of support are coincident with the center of motion of the sub frame on the main one and the other two points are either to the back or front of these points. The two former points of support are pivotal.

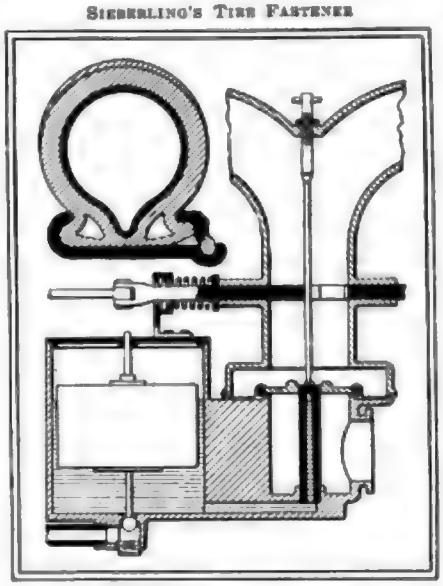
Letters patent No. 801,000, dated October 3; to William Y. Gambee, of New York—The device is a new form of connecting the steering knuckles of an automobile as well as innovations in the construction of the steering gear. Each knuckle carries a horizontal two-arm lever rigid with it, one arm extending to the front and the other to the rear. Midway between the knuckles on the car axle is pivoted a four-arm lever with arms at right angles to one another. To the forward and rear arms of the four-arm lever are fastened or pivoted the rods connecting the forward and rear ends of the steering knuckle arms and to the ends of the other arms those extending to the right and left, are pivoted rods running from arms on the base of the steering column. The latter arms are furnished with small gears which work on a semi-circular gear for lending support and holding the wheels of the car rigid.

Letters patent No. 800,684, dated October 3; to William E. Schneider, of Washington, D. C.—The inventor has a rotatory gasoline motor. The motor consists of two parts—a stationary casing and a rotating piston within it. In the latter are three tangential thimble-shaped recesses into which explosive mixtures is admitted through a valve system shown at the top of the illustration. At the lower left is shown the sparking apparatus, with recesses in the casing at that point so that when the explosion occurs the force will rest against the recesses in the casing and force the piston on in its revolution. Further around in the casing are six exhaust ports.

Letters patent No. 800,835, dated October 3; to Frank A. Seiberling, of Akron, O.—The invention relates to the method of securing pneumatic tires to the wheels. The wheel rim at one side has a clincher flange and at the other a seating for an endless ring. The tire, on the side of the endless ring, is retained on the wheel by a right angle flange held in place by the endless ring. In removing the tire the ring is first taken off, a turnbuckle loosening it, then the flange comes off and the tire can be removed.

Letters patent No. 800,864, dated October 3; to John C. Moore, of New York—The invention relates to an armor tread for pneumatic tires. The tire casing is made with a flat tread, encircling which is a flat metal band. The band is attached to the tire by studs with a large oval top passing through the armor and rubber casing and having on the inner ends a rubber protection for preserving the air tube.

SIEBERLING'S TIRE FASTENER



BREW-HATCHER CARBURETER

Letters patent No. 800,273, dated September 23; to Orson W. Davis, of Adrian, Mich.—The invention is a friction method of driving an automobile. A vertical motor is placed in front with the crankshaft longitudinally of the chassis. Axially in line with the crankshaft and to the rear of it is a transmission shaft, the front end of which is adjacent to the rear end of the crankshaft. The transmission shaft can, at will, be connected with the crankshaft through a band clutch. On the transmission shaft is a slidable friction wheel, the periphery of which contacts at opposite side with friction disks on cross shafts on the frame. The friction wheel can be moved forward or backward on the transmission shaft, by means of which changes of speed are gained. The drive from the ends of the disk shafts to the rear wheels is through side chains. The friction disks are moved against the periphery of the friction wheel by bell crank levers secured to the friction disks.

Letters patent No. 800,504, dated September 26; to L. E. Gibson, of Kokomo, Ind.—The invention is a friction clutch of the cone type. The female part is within the flywheel and the male portion is engaged from a sleeve on the transmission shaft through a double set of pivoted levers, one end of the levers being respectively pivoted to the male part and the sleeve and the other ends being pivoted together.

Letters patent No. 800,112, dated September 19; to Joshua W. Jones, of Harrisburg, Pa. The inventor's tire has a regulation tire casing within which is an inner air tube. Surrounding the tire casing is a wire protection in spiral form with the spiral holding the tire and is in turn held to the wheel by cross bolts from the lower side of it. The wheel rim has no clincher grooves, but rather the part carrying the tire is a semi-circular groove.

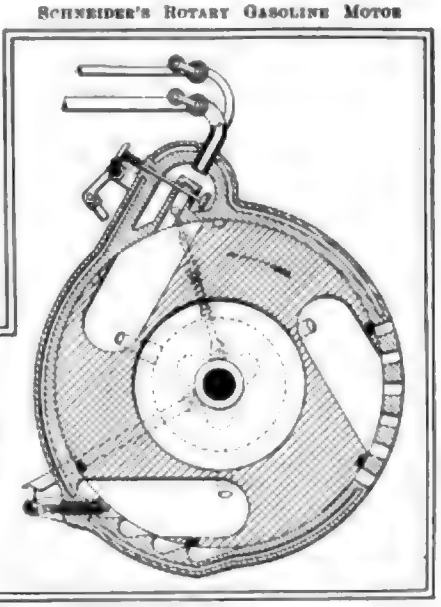
Letters patent No. 800,128, dated September 16, to William Gardiner, of Chicago.—The battery electrode of the inventor is made of relatively pure lead and consists of a plate suspended vertically with the connection at the top. The metal in the plate is folded with folds about 1 inch long and in the metal are transverse holes.

Letters patent No. 795,698, dated July 25; to William B. Hayden of New York.—In his fly wheel for explosive motors the inventor has the hub and spokes in a single casting keyed or otherwise fastened to the crank shaft. The rim of the wheel is two abutting metal rings that are offset to receive the ends of the spoke. The two rings are held together by cross bolts. The object of the construction is that rims of different weight may easily be attached to the spokes.

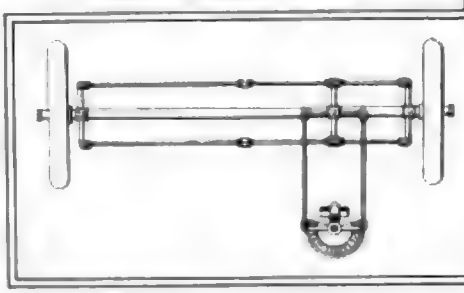
Letters patent No. 801,174, dated October 3; to John Bevington, of Cordova, Neb.—The roller bearing invented by Bevington consists of two circles of rollers, one for each end of the bearings. The rollers are not parallel throughout their length but of larger diameter in the centers than at the ends. In each end is a central rod acting as an axis for the roller, the rod itself working in the bearing in of the hoops slide one over the other.

Letters patent No. 800,784, dated October 3; to Edward C. Bailey, of Cromwell, Conn.—The device is a cushion tire for road wheels of vehicles consisting of an inner hoop which is convexed on its inner surface and flat on its outer. The ends of the hoop overlap, being adapted to slide one over the other when the diameter of the hoop is increased or diminished. Surrounding this hoop is an outer one with the inner surface flat and the outer one convex. The two hoops are separated by a series of rubber blocks, the latter being retained in position by the convexity of the hoops and adapted to slide slightly on the hoops when they are compressed and the ends of the hoops slide one over hhe other.

SCHNEIDER'S ROTARY GASOLINE MOTOR

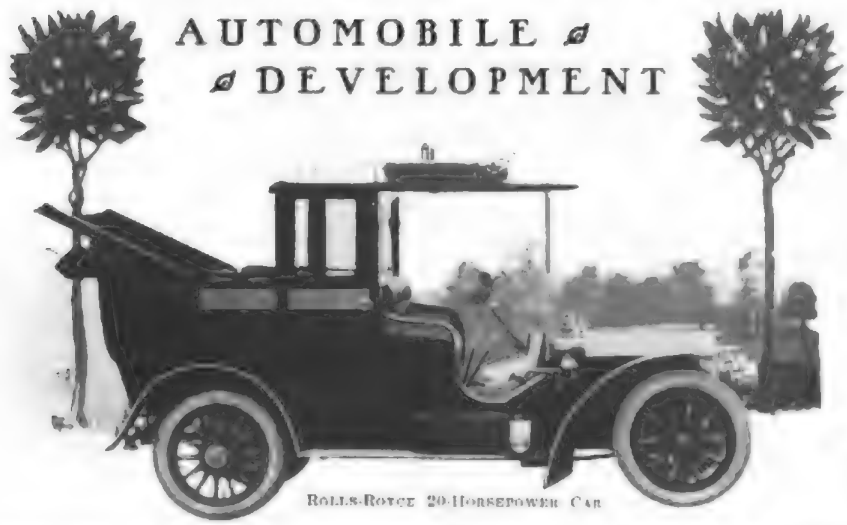


GAMBEE'S STEERING DEVICE



Digitized by Google

AUTOMOBILE DEVELOPMENT



ROLLS-ROYCE 20-HORSEPOWER CAR

ENGLAND'S FEATURE CAR

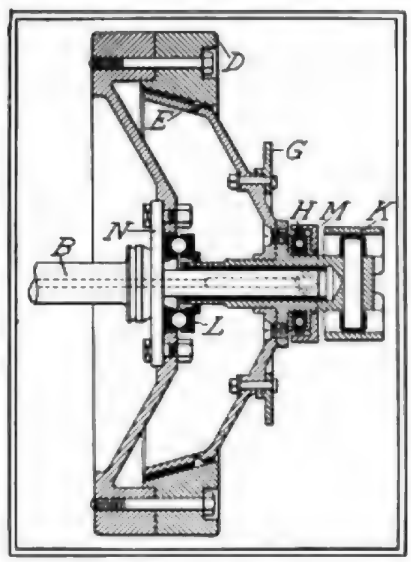
THE feature car of the recent Tourist trophy race on the Isle of Man, England, was the Rolls-Royce, the machine to take second honors, in spite of the features of construction and much talked of superiority of the machine. C. S. Rolls & Co., of London, its manufacturers, did not, however, build a machine specially for the event, but entered a strictly 1906 stock car. The 20-horsepower machine has as its leading mechanical requisites a vertical four-cylinder motor, with cylinders cast in pairs: friction cone clutch, sliding gear transmission, with four forward speeds, the third speed having direct drive and shaft drive to a rear axle of the floating type, the drive shafts of the axle not carrying any of the car weight, serving only to propel the wheels.

The frame is of pressed steel, tapering from amidships to the spring hangers. There are three cross ties in addition to the end braces, and the rear angles are also tied, not, however, to strengthen the frame so much as to provide a seating for the transverse leaf spring, upon which the rear end of frame rests, instead of, as usual, being hung from the ends of the axle springs. The wheel base is 109½ inches and the tread about 56 inches. The wheels are 35 by 5-inch drivers and 35 by 3½-inch steerers running on ordinary plain bearings of bronze or other desired metals.

The engine is of four cylinders, iron cast in pairs, 100-millimeter bore and 127-millemeter stroke, with a normal speed of 1,000 revolutions per minute, accelerating up to 1,500. The inlet valves, mechanically operated, are placed on top of the cylinders and so provide ports for inspecting the latter when necessary. The crankshaft is a nickel-steel forging running on five phosphor bronze bearings, with ring and splash lubrication. The crank chamber is of aluminum, halved and jointed horizontally, the lower half carrying the couple bearings for the shaft; a large inspection port is provided. The circulating pump runs off the crankshaft at right angles and the half-time gear is enclosed in the fore end of the crank case. Both pump and commutator are driven by skew gears, and the timing of the ignition is varied by sliding one of the skew gear wheels along its shaft instead of rocking the commutator on its axis. The commutator is divided into two parts, one forming a high tension distributor, and the other a low tension contact breaker. Only one trembler coil is necessary and the lining in each cylinder is synchronized.

The carbureter is of the usual float-feed type with a variation of the customary automatic air inlet. The middle valve is adjustable from the exterior and the whole device is extremely simple and efficient. The engine is governed on the throttle by the usual centrifugal device, and the crank revolutions can be varied by hand control from 150 to 1,500 revolutions per minute, or an equivalent of from 5 to 45 miles per hour on the top speed.

The lubricator shown on the dashboard is of aluminum, containing a pump belt driven off the engine. It maintains a normal pressure of 20 pounds per square inch, which is regulated in its feed by the conical screws attached to the sight feed tubes. The usual hand pump for extra lubrication of the engine is provided. The radiator is in the usual position in front of the bonnet and consists of the gilled vertical tubes running into end pockets, which have greatly supplanted the prettier but much less satisfactory honeycomb cooler. A belt driven fan behind the radiator helps to cool the engine. The tension of this belt is easily adjustable.



ROLLS-ROYCE CLUTCH

In the gear box practically the only variation from the design set out at the beginning of the present year is noticeable. This is the substitution of four for three forward speeds and the addition of a second sliding unit. The idea was to maintain the usual direct drive on the third, the usual top gear, and to provide a fourth or extra gear for the long downhill sweeps and fast running stretches. The gears were also altered for similar reasons. The standard figures are: First speed, 8 miles per hour, accelerated to 10; second, 16 miles, accelerated to 24; third, 32 miles, accelerated to 48. The car under notice was speeded—9½ miles per hour, accelerated to 14; 22 miles, accelerated to 33; 32½ miles, accelerated to 48, and 45, accelerated to 66 miles per hour. This will go to explain how the high average pace of nearly 34 miles per hour was maintained over the 208 miles in the Tourist race. The ordinary low speed gear is calculated to take a fully laden car up any incline of one in five, or 20 per cent. The usual foot brake is fixed at the rear end of the gear shaft, and acts through the differential gear, while the hand brakes are of the expanding double action type on the driving wheel hubs. The fixed pivots of the levers are at the bottom, and a floating fulcrum at the top ensures equality of brake pressure.

Full engine control is provided on the steering wheel in the center of which are fixed the necessary ignition and Corliss gas lever, working through the hollow steering post, so placed that the driver always has both in reach, no matter at what angle his steering may be set.

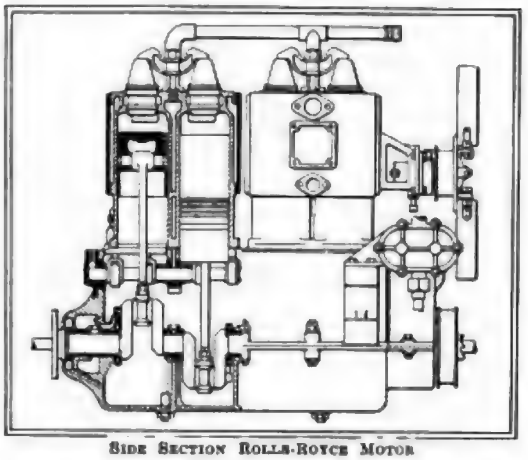
The front axle is a solid forging of nickel steel forked at each end, the steering pivots being fitted with ball bearings. The pivoted extension axle upon which the steering wheels run and are borne is bushed so that when worn the bearing can be renewed. The hubs are oil retaining and dirt excluding, end play being taken up by central flanges and washers, which also serve to ensure proper lubrication. The steering is through a case-hardened steel worm working in a phosphor bronze section with adjustable bushes to take up wear, and with ball thrust washers to take up weight of steering column.

The rear axle, which is of the live type, is designed so that the portion bearing the car load and taking up the traveling stresses is dead, while the transmitting mechanism is under no stresses other than those caused by transmitting the engine power to the road wheels. This is secured by constructing the rear axle of the two lengths of large diameter heavy gauze hardened steel tube, which run into and are flanged and bolted to the usual aluminum casting, which contains the differential and bevel gear. The wheels are then mounted on the steel tube ends by placing two hardened steel sleeves with suitable thrust washers, the wheel hubs being cor-

Digitized by Google

responding phosphor bronze bushes with large faces to take the end thrust. Inside the axle tubes suitable shafts communicate the power from the differential, each shaft having on its exterior end a jaw clutch which engages with suitable teeth formed in the outer end of the road wheel hub. The bevel gears have ball thrust blocks. Lubricant in bath form is used within the case.

In the clutch, the flywheel of the motor is slightly dished and is bolted to the flange N on the engine shaft B. Aluminum is the material used throughout. To the rim of the flywheel is bolted the ring D, forming the female part and operating within it is the male part E carried on a sleeve and secured thereto by flange and screws. A leather lining separates the male and female parts. The clutch sleeve connects with the drive shaft to the gear case through the universal joint K, secured by a vertical pin to the clutch sleeve. Engagement of the clutch is through the ring M, on either side of which are short arms for connection with the clutch pedal. End thrust is cared for by two sets of ball bearings—one set, L, between the flywheel and the bearing ring on the clutch sleeve, and the other set, H, for absorbing the engagement thrust and carried between the ring M and the flange on the clutch sleeve. A feature of the clutch is the brake disk G, so arranged that when the clutch is moved inwards for disengagement it comes in contact with a brake, which reduces the speed of its rotation and facilities the changing of the gears in the transmission gear case.



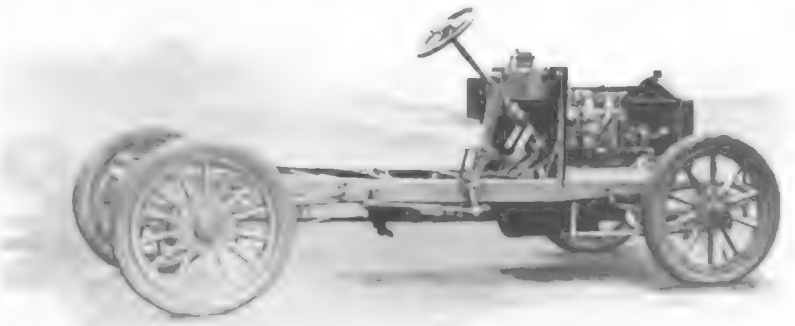
Side Section Rolls-Royce Motor

ENGLAND'S VETERAN CAR

The 18-horsepower Siddeley car, which was run through England's Tourist trophy race in the Isle of Man on September 14, was the veteran of the crowd and is an instance of the inclination, at present very apparent among European manufacturers, to return to the engine design of 2 or 3 years ago. This is not so much due to a belief in those earlier patterns as to the conviction that, as prices are falling, the simpler constructed engine and chassis must be reverted to. In addition, these simpler forms of engine have really given greater satisfaction to ordinary users, for the refinements of the past year or two have brought with them risks of failure, often out of proportion to their benefits, or they have not quite justified their cost. The car that does everything for itself is all right as long as it does it, but when it gives up it requires skilled knowledge to put it going again. This Siddeley car is over 3 years old. It was actually the first 18-horsepower car built by the Wolseley company of Birmingham for J. D. Siddeley, and, prior to the latter's 5,000-mile reliability match with Paul Meyan, had been driven upwards of 30,000 miles all over Europe. It is therefore a well-tried article and its behavior against the latest productions of other leading factories was followed with interest. The frame is of pressed steel of taper channel section. There are only three cross-members—one to carry the front part of the engine, one to carry the third support of the gear box, and one tail piece. The frame is stepped inwards 3 inches on either side of the dashboard to give a wide steering lock. The springs are semi-elliptical, 33 inches long in front and 40 inches behind. Both axles are of I-section forged solid. The front axle is of the jaw-ended type, the weight of the steering pivots being taken on ball bearings. The back axle is of the dropped type, and all wheles run on ball bearings, having four rows of balls in each hub. The four-throw crankshaft is carried on three main bearings and the bottom half of the crank case can be removed without disturbing the crank bearings. The water jackets to the cylinders are aluminum, cast in one piece with the crank chambers. The cylinders are of cast iron accurately ground to size. The cylinder heads are separate from the liners and set on with a ground joint. Both exhaust and inlet valves are mechanically operated, the valve pockets being at the same side of the cylinder, the inlet valve on top. The latter has a variable lift operated by a lever on the steering wheel and constituting the most economical form of throttle control. A bridge carries the rocking levers for this purpose and renders the valves very easy of access. By the removal of the two locking nuts the bridge can come away and the valve boxes lift right out.

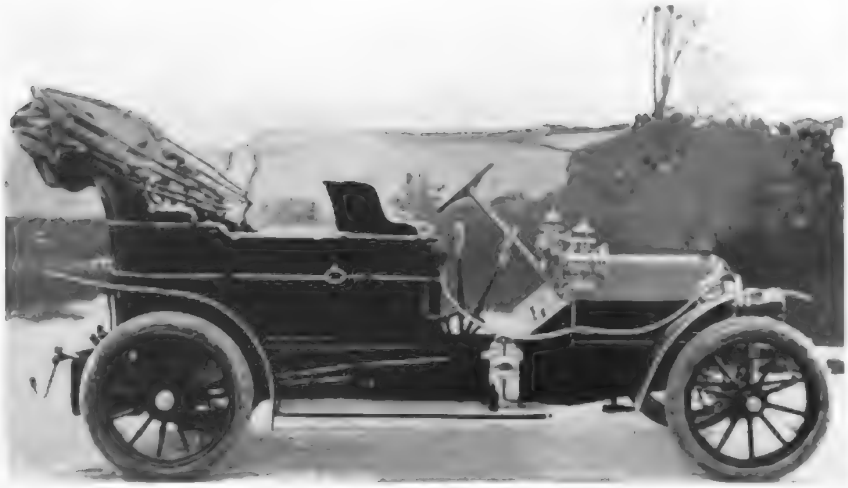
Water circulation is by a gear-driven rotary pump through a gilled tube radiator. Automatic governing of engine on the usual throttle valve is adopted; the carbureter is of the ordinary float feed form and the clutch of the cone leather faced type. Three-point suspension for both motor and gear box is adopted, swivel bearings being provided for the frame joints of the differential axle case to avoid twisting stress on the latter. The internal portion of the clutch is mounted freely on an extension of the crankshaft and carries two arms for the propeller shaft between the engine and the gear box. The clutch spring is of the volute type, and is mounted on the crankshaft so that the end thrust is entirely self contained. The differential gear is of the straight-toothed type, which avoids the end thrust of the bevel-gear type. Four forward speed changes are provided, ample size being given to each pinion. The sliding gears are arranged on two sleeves and are operated by means of a drum and toothed section, which makes it impossible to present the gears irregularly. The main bevel gears are in a separate portion of the gear box to the sliding pinions, so that any steel chippings from the latter will not find their way into the bevels, which generally leads to noisy running and short life. The drive from the differential shaft to the road wheels is by side chains 11-16 inch wide and a 1½-inch pitch, running on 33-tooth sprockets on the interior faces of the driving wheels, the interior circumferences of the sprockets forming brake drums. There is no usual countershaft brake. Both foot and hand application are directed to the driving wheel drums. The right-foot pedal operates expanding cast iron shoes inside the brake drums, the shoes being expanded by adjustable toggles equalized for both wheels. The side brake, which runs in the same quadrant as the change speed lever, is pulled back to apply external band brakes on the same drums.

The steering gear is of the Panhard type, irreversible and adjustable for wear. Lubrication is gravity-fed throughout. Each cylinder and crosshead has a separate feed pipe and is independent of the splash, a diaphragm being placed at the top of the crank chamber to prevent oil splashing on the piston. The main bearings are specially fed and the crank pins provided with an oil catcher. The flywheel bearing has a ring catch to prevent oil leaking onto the clutch. The four vertical cylinders are 4 by 4-inch bore and stroke, showing 20 brake horsepower and 1,000 revolutions per minute and accelerating up to 1,800. The speeds provided for are 11, 19, 28 and 37 miles per hour; the wheel base is 7 feet 10 inches, with 4-foot 3-inch gauge. The wheels are 34 inches and the approximate weight of the chassis is 1,792 pounds. Bodies of all modern designs are fitted as per order, the only



Rolls-Royce 20-Horsepower Chassis

Digitized by Google



REGENT 18-HORSEPOWER TOURING CAR

restriction being additional price for enclosed types. The car that participated in the Tourist race was in every detail, as the rules required, a stock model, and the body with wide side entrances, heavy upholstery and fine finish conformed in every detail with the machines built for next year's trade.

THE CULVER RUNABOUT

The Culver is the name of a new runabout to be manufactured in Aurora, Ill., by the Practical Automobile Co., a recent $100,000 corporation. The machine will have a 6-horsepower, two-cylinder, air-cooled motor, with cylinders opposed and placed lengthwise beneath the center of the body. Circular flanges cool the cylinder walls and longitudinal flanges are used on the heads and valve cages. Mounted on a shaft, in line with the motor shaft, is a two-speed and reverse planetary transmission, with a sprocket between this and the flywheel for single chain drive to the center of the rear axle. A feature of the running gear is the use of larger road wheels than usual, and a still further innovation is found in the use of solid rubber tires. One of the incorporators of the concern is a physician who has had much experience with pneumatic tires puncturing, always when a hurried and urgent call had to be responded to, and the concern hopes by the use of larger wheels to partially make up for the loss of resiliency occasioned by dispensing with pneumatics.

PACKARD RATING

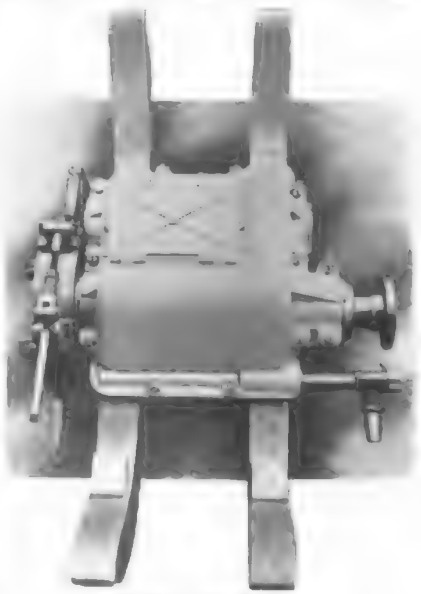
Motor Age, in a recent issue, in describing the Packard 1906 touring car, gave the rating of the same at 24 horsepower. The Packard Motor Car Co., of Detroit, Mich., manufacturer of the machine, gives facts relative to the rating of this machine. Model N, the Packard car of the present season, has four cylinders with a measurement of 4 1-16 by 5¼ inches, and is rated at 28 horsepower, and the 1906 machine has four cylinders with a bore and stroke of 4½ by 5½ inches, respectively, and is rated at 24 horsepower. The 1906 motor has frequently developed 46 and 47 horsepower on the Packard testing rack, but is nevertheless rated at 24, the reason for which is found in that it gives 24 horsepower at the motor speeds at which it will be operated 90 per cent of the time, considering that from 20 to 25 miles per hour is about the average speed at which the car will be driven, and at these rates the crankshaft speed is from 600 to 700 revolutions per minute. It has bene found on the testing rack that with the motor running at these speeds this amount of horsepower is generated. This method of motor rating is unique with many French makers, the builders of the Panhard machines rating at 24, machines that will show over 40 horsepower on the testing rack. The price of the 1906 Packard will be $4,000 and not $3,500, as appeared in the company's advertisement last week.

EDGE'S LATEST CAR

Prices of automobiles are dropping in Great Britain and some of the concerns that have previously enjoyed a lucrative trade in high priced cars have been affected so they are now bringing on the market smaller and lower priced machines. These concerns realize that the market for big cars is limited, in many cases, to replacing machines now in use, and that the big market is to be found with buyers looking for smaller machines. Perhaps the most interesting entrant into the small car field is S. F. Edge, Ltd., of Acton, London, which has ready a light car, the Regent, a machine of second grade when compared with the biggest cars now made. The Regent is an 18-horsepower machine, with four vertical cylinders carried beneath the bonnet. The cylinders have a bore and stroke of 3½ by 4¾ inches respectively and the rated power is produced with a crank shaft speed of 1,000 revolutions per minute. The mechanical valves are set in the bottom of integral ports on opposite sides of the motor, with two cam shafts required. Low tension ignition is adopted. The crank shaft is a drop forging and runs on plain bearings, all other bearings in the machine being of the ball type. Gasoline is fed to the float-feed carburetor from exhaust pressure and lubrication of the motor is by a positive pump gear driven off the end of the cam shaft. Motor cooling is through a gilled-tube radiator with water circulated by a pump gear driven off the crank shaft. In case of destruction of the pump the circulating system is so constructed that thermo-syphoning will continue to circulate the water. The clutch is of the internal cone type, leather lined, and is self-contained.

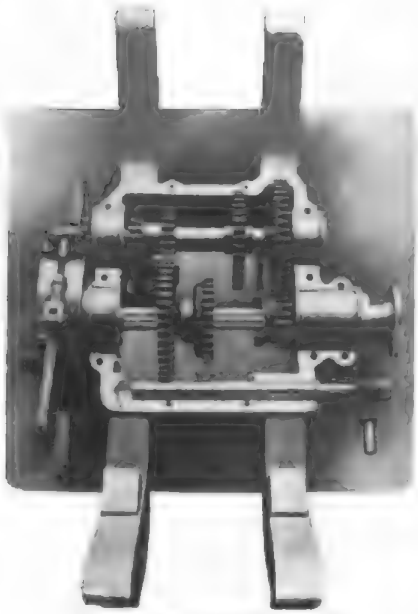
Three forward speeds and a reverse are gained in the gear box. Drive on the high speed is direct, with the counter shaft revolving. The sliding unit, two gears, is on the main shaft, and on the forward sliding gear are dental face teeth for connecting with the master gear on the clutch shaft for direct drive. The gear case is split horizontally in line with the main and counter shaft bearings, the top half being held in place by a dozen bolts, with nuts cotter pinned in place. The oil bath for the gears is provided by supplying lubricant through the inspection opening in the top at regular intervals. On the bottom of the case are four integral arms, one at each corner, for securing the case to the main or subframe of the car. The transmission from the gear box is by propeller shaft to the center of the live rear axle. Two sets of brakes are used—a single friction band one for regular use on the end of the gear shaft in the rear of the transmission box, which is pedal applied, and two emergency internal expanding ones on the rear hubs operated by lever at the right side of the car.

The car body is of rakish lines, partly occasioned by the use of a 114-inch wheel base, with the rear axle practically beneath the back of the body and the front axle, fashioned slightly along Mercedes lines, placed well to the front of the radiator. The rear semi-elliptic springs are swung outside of the sides of the pressed steel frame and the front axle has the usual motor clearance drop. The double side entrances are wide and hinged at the rear. The back of the rear seat is on a level with that of the front one and a short running board, terminating several inches in rear of the front fenders but connecting with the rear ones, are features of the body construction. Spark and throttle levers are on stationary quadrants on the top of the steering wheel. The change



REGENT GEAR BOX

Digitized by Google



REGENT TRANSMISSION GEAR

speed and emergency brake levers work in quadrants side by side at the right of the footboard. In the footboard are the clutch and regular brake pedals. The wheels are 32 inches in diameter and shod with 3½-inch tires. The tread is standard and the weight 2,198 pounds.

THE NEW COLUMBIAS

A new 20-horsepower four-cylinder car will be among the Columbia machines. In addition to this the 1906 line cars will consist of a two-cylinder car and a 40-horsepower, four-cylinder car, perpetuating the present models. All will show improvements as the result of another year's experience. The crankshafts, square shafts and all important parts of each model will be of nickel steel. The company's electric line will consist of the new lightweight brougham, which has already been described, and landaulets, hansoms and victorias, mounted on the same chassis as the brougham. The lighter Columbias, including runabouts and victoria-phaetons, will be continued. The company will continue to manufacture electric delivery wagons and trucks of load capacity ranging from 1,000 pounds to 10,000 pounds.

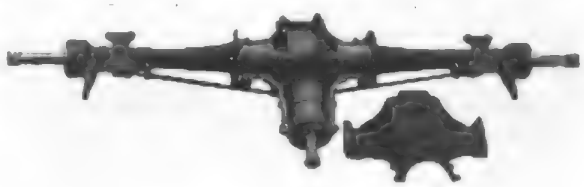
PHILLIPS' DUPLEX MOTOR

Double spark plugs in each cylinder and two throttle valves—one between the carbureter and one cylinder, and the other relatively placed with reference to the other cylinder and the carbureter, are the leading features of a new design of double opposed, water-cooled, automobile motor, made by W. L. Phillips, 405 Tacoma building, Chicago, Ill. The motor is made to hang beneath the bonnet of a car, the cylinders hanging crosswise of the chassis frame. The rated power of 12 is generated with a crankshaft speed of 1,125 revolutions per minute, at which rate the pistons travel 750 feet per minute. The bore and stroke are 4½ by 4 inches, respectively. The crank case is split horizontally in line with the crank shaft bearings, the two halves held together by opposing flanges and bolts. In the top half is an upper part for containing the cam shaft, cams and ends of push rods, and the top of this part is a square inspection cap, which, when removed, allows the mechanism within the crank case to be examined. Each cylinder is an integral casting with the valve ports on the upper side of the cylinder heads and with the mixture entering the front ends of the ports and the exhaust leaving from the rear ends. The cylinders have lugs for bolting to the vehicle frame. Both cylinders are water jacketed, a space of ¾ inch being left for circulation of the water. The inner ends of the cylinders and the flanges thereon are machined so as to fit tightly with the openings in the crank case, and are retained by screws through the flanges into like flanges on the crank case.

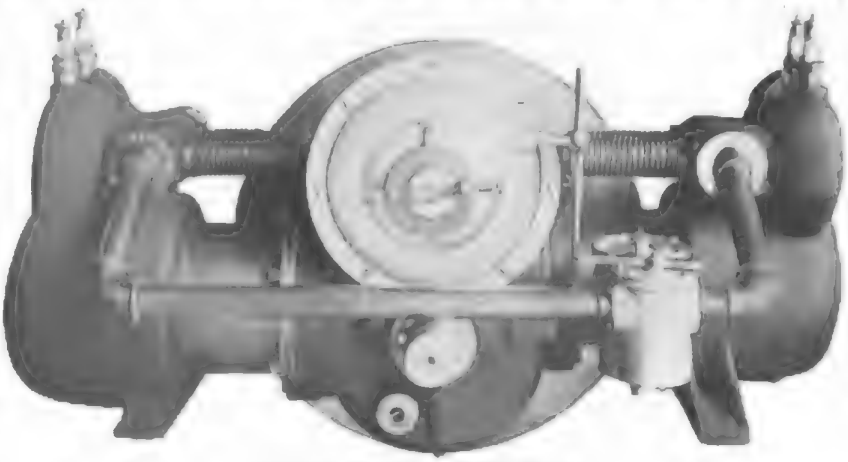
The crankshaft, a drop forging, has a diameter of 1¾ inches and has the cranks mounted at 180 degrees. It revolves on two bearings; the forward one 2½ inches long and the one adjacent to the flywheel being 3 inches. Each crank pin is 2¼ inches in length and of the same diameter as the crank shaft. The wrist pin bearing are 1 inch in diameter and 2¼ inches long. The pistons follow standard lines in construction, as do the compression rings they carry, a statement equally applicable to the the connecting rods that are made of phosphor bronze and 8 inches in length. The crank bearings are filled with nickel babbitt and bronze bushings are used in the piston ends.

All valves are mechanically operated and interchangeable. They are placed horizontally above the cylinder with the valve stems parallel to the cylinder bore. Each stem is surrounded by an extra heavy coil spring, extending practically the entire length of the stem and held thereto by key and washer. The cams are pinned in place. On the front end of the cam shaft is the large spur gear through which the drive is from the crank shaft. On this gear are the governor weights which are connected up with the two throttles, and on the end of the shaft outside of these weights is the commutator, pressed in place. The governor weights of the ball variety are secured to a sleeve of the shaft and the sleeve operates through a horizontal arm, which can be seen extending out of the casing and uniting with a similar vertical rod connecting with a cross arm over the top of the mixing chamber of the carbureter. One end of the cross arm is pivoted to the throttle controlling the right cylinder and the other to that for the left cylinder. The throttle can be set in any desired position to the cross arm, but once set the movement of each is the same relative to the movement of the cross arm by the governor. The mixture from the carbureter travels through 1-inch tubing to the valves, the distance to the right one being much less than that to the left. The maker claims to overcome any difference in the quantity of mixture reaching each cylinder by the adjustment of the different throttles to the cross arm. Double spark plugs are placed vertically in the tops of the combustion chambers. The exhaust pipes have a 1¼-inch diameter.

For marketing purposes the maker is showing the motor connected through a cone clutch with a three-speed and reverse sliding gear transmission, the whole outfit, the motor and transmission being adapted for final shaft drive. The cone clutch is located within the 17-inch flywheel which weighs 102 pounds. The sliding gear transmission is made with four integral lugs for attachment to the ordinary frame constructions. The main and counter shafts are side by side and with the case split horizontally in line with the bearings. On direct drive the forward gear of the pair of sliding gears on the main shaft is locked with the master gear on the rear end of the clutch shaft and on the other two forward speeds the drive is

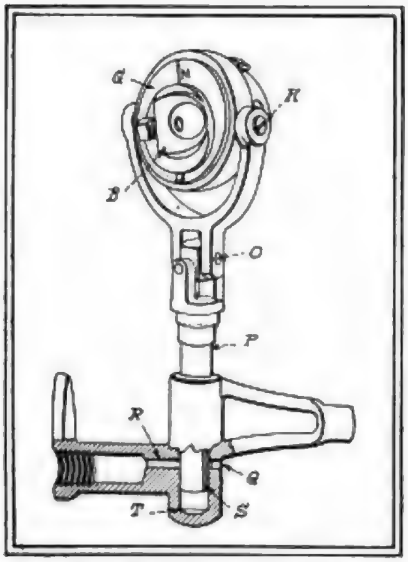


REGENT REAR AXLE CONSTRUCTION

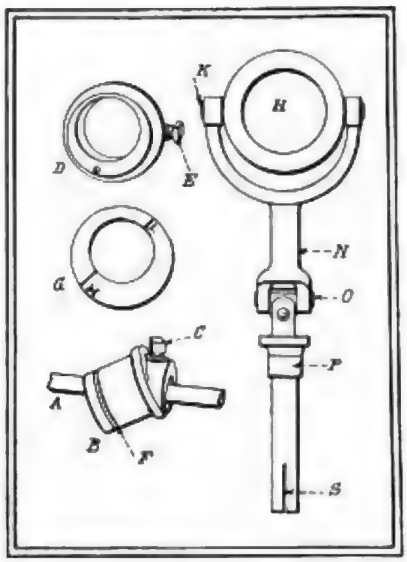


PHILLIPS' DOUBLE THROTTLE MOTOR

Digitized by Google



MASON-KIPP OILER ASSEMBLED



MASON-KIPP OILER DISSEMBLED

to the countershaft and then back to the main one. The reverse idler is on a shaft in the bottom of the case. All gears are face-hardened and are spaced by sleeves to obviate their getting out of position. Phosphor bronze bearings are used on both shafts and the base of the case carries an oil bath. Changes in speed are gained through one lever and the relations of speed to the direct drive are as follows: Low speed, 2-7; second speed 4-7 and reverse 2-7.

NEW MILWAUKEE MOTOR

Another two-cylinder opposed, horizontal motor for automobile uses comes from the Davis Mfg. Co., a Milwaukee hardware specialty concern that has experimented largely on gasoline engine construction. The cylinders with 4½-inch bore and 4-inch stroke are cast with the walls, water jackets, cylinder heads and valve ports made integral. The ports are on the top side of the cylinder heads, the valves being horizontal. The crank case is a spherical casting with the top removed. It is in halves, being split vertically in line with the crank shaft bearings, so that each half carries half of the bearings. The top of the case is a large square inspection cap and when removed the camshaft may be taken out without disturbing the crankshaft or connecting rods. This is accompanied by having the camshaft bearings contained between the walls of the case and the edges of the inspection cap. The crankshaft revolves in a pair of long bronze bearings. The pistons carry three rings and are ground, as are the cylinders. Steel is the material used in the connecting rods, which carry babbitted bronze bearings. The valves are mechanically operated, have a diameter of 1¾ inches and are interchangeable. The push rods carry steel rollers on the ends and work in sleeves 4½ inches long. On the end of the camshaft is carried a simple form of timer, enclosed within a cam-shaped case.

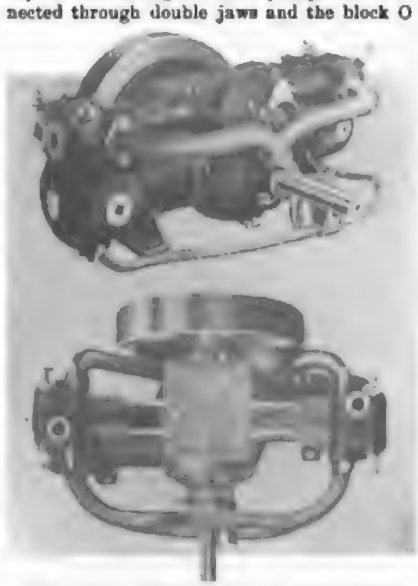
The carbureter is carried close to the crankcase and the pipes leading to the inlet valve branch above a short vertical part. They are flanged on the ends next to the valves and a couple of bolts hold them in place. The exhaust pipings unite near the lower part of the flywheel. Spark plugs are carried in the top of the valve ports, being placed in an angular position in the outer corners of the port. In the ends of the ports are inspection caps, screwed in place and which can be readily removed when the valves can be drawn out. On the side of the crankcase is a gear driven water pump. The lubrication calls into service a four-plunger oil pump which delivers a positive amount of oil, each bearing having its own pump with separate adjustment.

THE MASON-KIPP OILER

An automatic lubricator for automobiles which will force oil against a pressure of 1,400 pounds and which has no valve in its construction is manufactured by the Mason-Kipp Mfg. Co., of Madison, Wis., and is known as the Mason-Kipp. The oiler is of the single plunger variety, with the plunger moved through the medium of two eccentrics. Its working can be seen by referring to the assembled view in the illustrations. The plunger P is raised and lowered within the casing by the complex eccentric mechanism at the top. In the casing are two openings, one Q, through which oil is drawn from the reservoir, and the other R, diametrically opposite, through which the lubricant is forced to the parts to be oiled. In the side of the plunger P, near its base, is a vertical groove S. On the up stroke of the plunger the groove S is facing the opening Q, so that as a vacuum is created in the space made by the ascent of the plunger the oil is drawn through the opening Q and the groove S, filling the space T. When the plunger is at the top of its stroke an angular eccentric turns the plunger half around, so that the groove on the down stroke faces the exit R, and as it descends the oil is forced out of the space T, up through the groove S and out through the opening R to the parts to be oiled. With every up and down stroke of the plunger this operation is repeated and oil is delivered positively to the bearings.

The unique construction of the oiler is to be found in the eccentric combination at the top of the plunger. The plunger is connected through double jaws and the block O with the forked piece N, which carries the ring H through the trunnions K. There are two eccentrics, one to raise and lower the plunger and a second to rotate the plunger, so that on the up stroke the plunger groove faces the inlet passage and on the down stroke faces the exit port. The shaft A drives the pump and is itself gear driven from the motor or can be one of the motor shafts. On this is placed the barrel-like angular eccentric B, by means of which the rotation of the plunger is accomplished. The eccentric B is held to the shaft A by set screw C. Over B is placed the eccentric D, which has the set screw E for rigidly securing it in place, the inner end of E resting in the circular groove F in the left end of the eccentric B. Over the front part of D is placed the eccentric ring G for adjusting the position of the eccentrics B and D with reference to each other, so that the amount of lift given to the plunger can be varied. The complete eccentric device is then placed within the circle H, and is ready for operation.

The eccentric B is rigid with the shaft A and the eccentric D is in turn rigid with B, except for adjustments. As the shaft A revolves the raising and rotation of the plunger occur. To adjust the length of the plunger stroke the ring G comes into use. On it are the marked halves L and M, so that the amount of adjustment can be known. In adjusting the eccentric D is turned on the eccentric B. For the greatest lift the thick parts of both eccentrics are on the same side of the shaft A; the plunger then has a ⅝-inch throw, and when the full parts of the eccentrics are on opposite sides of the shaft the plunger has no throw.



THE DAVIS MOTOR, MADE IN MILWAUKEE

F. H. R. SPARK PLUG

The F. H. R. spark plug, taking its name from the initials of the manufacturer, Francis H. Richards, 15 Murray street, New York city, is an innovation in that the stem of it is made from a single piece of steel, with a thread on the upper end for attaching the wire terminals to. The stem carries on its lower end a circular head made integral with it. Double mica insulation can be looked upon as one of

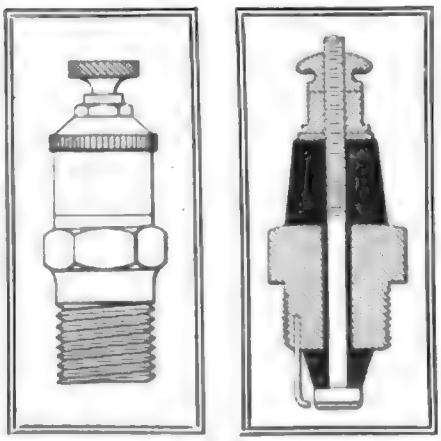
Digitized by Google

its features. Both above and below the metal part that screws into the cylinder head is a cylindrical mica sleeve, the upper one extending from the top of the metal part to the base of the cap beneath the top screw nut and the lower one separating the body metal from the end of the steel stem. The steel bolt throughout its length, within the metal body, is surrounded by an insulating sleeve. The second electrode is a curved wire within the metal body. It is well imbedded in it. All plugs are tested under high voltage before leaving the factory.

PORTABLE GARAGES

The latest addition to the line of portable automobile houses is one manufactured by the Lloyd Iron Roofing & Paint Co., of Chicago, which is fireproof in that the sides and roof are made from galvanized corrugated steel. These houses are made in sizes from 9 by 10 feet to 12 by 18 feet, with side walls 8 feet high. The advantage of the galvanized steel product is the safety with which the houses can be used in any part of the city, the danger of fire being absolutely eliminated as far as the building itself is concerned. The frame is made from iron and steel, iron piping of large diameter forming the uprights of the frame and the three horizontal pieces are made from angle iron with the angle facing inwards and downwards. Holding the uprights and horizontals together calls into use malleable castings, used wherever these two parts of the frame meet. Supporting the roof are T-iron rafters rigidly secured at the eaves to the top horizontal parts of the frame and similarly fastened at the apex, and midway of the eave and apex are angle iron purlines for assisting in carrying the rafters and also for holding the 24-gauge galvanized 3V-crimp steel which forms the roof. The ridge roll along the apex and the finals at each end of it are made from galvanized metal and attached so that the roof is waterproof. The sides, ends and doors are made from sections of galvanized corrugated steel. Light is supplied through a small window in the gable, and in either side a 2 by 3-foot window. One end is given to double swing doors, which give an opening 8 feet square. The door frame work consists of three horizontal angle pieces braced between the ends by angularly placed pieces, to which the metal is attached. On the doors are iron hasp for padlocks. The foundation is not supplied but can be made from cement, concrete, asphalt, cinders or other inflammable material. The company is also marketing another make of portable house in which the same style of frame work is used but the sides and doors are made from matched and beaded pine. The roof is of steel. This style of house is adaptable for sections outside of the fire area of cities. The size of the wood building is identical with that of the steel, as are the doors, windows and roof.

Buyers residing in cities remote from the seat of manufacture, require little mechanical skill in putting the houses together. The manufacturer delivers the building in parts, framework, roof, walls, doors and windows being properly marked, so that buyers experience slight difficulty in following the instructions.



H. & M. 1906 SPARK PLUGS F. H. R.

In the putting of the parts together bolts are used almost exclusively, so that once together it is always together, and winds, rains and frosts can provoke but slight results. The foundation is furnished by the buyer, who must see to it, that whatever kind of purposes using is ready for receiving the building, then with the aid of an average carpenter and an assistant laborer the work can be completed within a day, and the owner finds himself independent of the garages and the annoyance of walking to public stations.

THE H. & M. SPARK PLUG

E. J. Willis & Co., Park place, New York city, are out with a new design of spark plug, to be known as the H. & M. Conspicuous in its construction is the use of a hollow central rod forming one electrode. This rod throughout its length is insulated from the metal body part of the plug. The rod is enlarged at the inner end into a bell-shaped portion in which is held a metal ball. The ball is retained in this expanded part by a circular ring pressed into a circular groove in the inside of the metal plug, one end of the ring being bent radially across beneath the metal ball, retaining it in position and forming the other electrode. When the motor is not vibrating the ball rests on the cross part of the ring and is not in contact with the bell-shaped end of the central electrode. At times the spark passes between the bell part and the top of the ball, and at periods of vibration, when the ball does not rest on the cross part of the ring, it passes between the bottom of the ball and cross part of the ring. The company claims that at all times there is sufficient space between the ball and either the bell-shaped part or the cross part of the ring to give a good spark. The vibration of the ball keeps all dirt off the electrodes, thereby preventing sooting up. The hollow central electrode admits air during the suction stroke of the motor, the air aiding in cooling the cylinder head as well as helping in keeping the plug electrodes clean.

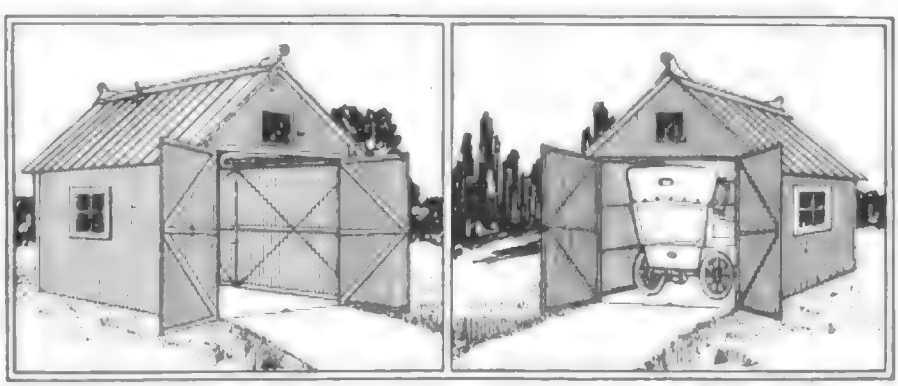
MOTOR CAR LITERATURE

The Reeves Pulley Co., of Columbus, Ind., illustrates its four-cylinder air-cooled automobile motor in a ten-page booklet, in which is a description of the motor, as well as line drawings of several of the leading constructions used.

The Auto Girl and the Seasons is the name of a natty little book now circulated by W. B. Riley & Co., Philadelphia, in the interest of the Riley laprobes for use in automobiles. The romance of the automobile robe in wet, dry, windy and dusty weather is given in verse, and each page is suitably illustrated. The book is accompanied by another, having on alternate pages illustrations showing the exact size of texture used in the robes and the colors in each.

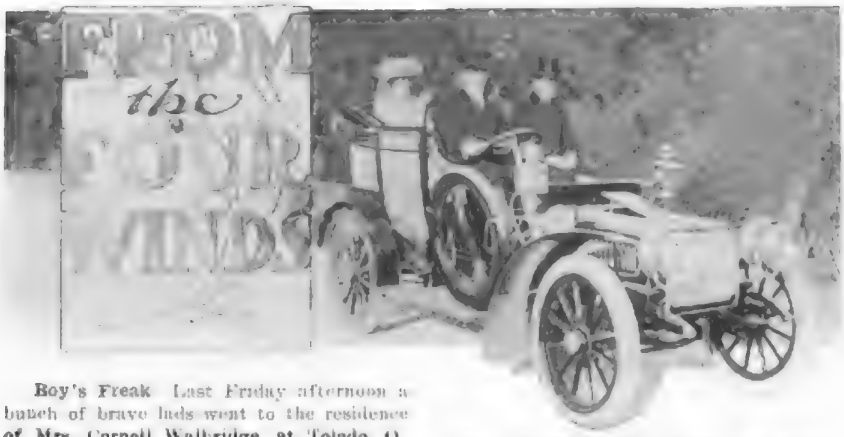
Type X, the new 20-horsepower Pope-Toledo car for next year is shown in a neat twenty-page catalogue. The front and back covers comprise one scene, of woodland nature, showing the car approaching along a wooded road on the front, and departing along a similar one on the rear page. Each page of the book is filled with a landscape scene containing the car and a small square of reading matter thrown in the corner. In addition to details and illustrations of the machine a list of Pope agencies is given. The printing is in green and the car illustrations in black.

Plain Gas Engine Sense is a new book on the gasoline engine, by E. L. Osborne, and published by the Gas Power Publishing Co., of St. Joseph, Mich. The book contains 123 pages, divided into twenty-two chapters, dealing with such parts of the engine as: different cycles, fuels used, compression, ignition, wiring, power and heat losses, cooling, governing, timing of valves, regrinding valves, lubrication, brake tests, packings, different designs and troubles. Upwards of a dozen line drawings are used in explaining the wiring and other parts of the motor and as many half tones illustrating other motor parts. The book is published in pocket size, and bound with double covers in tan-colored cloth.



WOOD AUTOMOBILE GARAGE STEEL AUTOMOBILE GARAGE

Digitized by Google



MRS. LESLIE CARTER IN HER DEAUVILLE

Boy's Freak—Last Friday afternoon a bunch of brave lads went to the residence of Mrs. Cornell Walbridge, at Toledo, O., stole quietly away with her automobile and drove it to Erie, Mich., where they abandoned it.

Another Beach Meet—The Atlantic City Automobile Club has scheduled another beach meet over the Ventnor course for October 27. The entries of quite a number of the contestants in the Vanderbilt cup race have been promised the promoters, who are endeavoring to wrest the short-distance honors from the Cape May course.

Will Entertain Visitors—The New York Motor Club will give a house warming at its new club rooms at the Cumberland, on upper Broadway, this week. On Friday it has undertaken to give 100 members of the Chicago Press Club, who are to visit the New York Press Club, a ride through Central park and Riverside drive and down town to the city hall, where a call will be made on Mayor McClellan.

Bisons Ask Why—At its session last week the board of governors of the Automobile Club of Buffalo appointed a committee, consisting of Secretary Lewis, H. A. Meldrum and W. H. Baker, to ask the officials of the American Automobile Association why the Thomas racing car entered by Harry Houpt in the Vanderbilt cup race was not chosen as one car of the American team. The basis for the club's action is that the car was entered as representing the Automobile Club of Buffalo.

Enthusiasm at Milwaukee—Plans for an enlargement of the sphere of usefulness of the Milwaukee Automobile Club are well under way. Sherburn M. Becker, one of Milwaukee's wealthiest young men, a member of the city council and one of the most enthusiastic motorists in the city, has been chosen president. The other officers of the club are: First vice president, Dr. Louis Fuldner; second vice president, F. G. Curtis; secretary, James T. Drought; treasurer, William H. Pipkorn. S. M Becker, James T. Drought and Dr. Louis Fuldner were chosen as directors for 3 years; W. H. Pipkorn, F. G. Curtis and H. H. Rice for 2 years, and Dr. Lewis Sherman, J. R. Barthelet and C. I. Drake for 1 year. For the winter season a series of meetings is planned, at which papers or lectures on the automobile, its care and management, and similar topics will be given by recognized experts in their various lines. The club starts on its new career with a total membership, after eliminating all dead timber, of 125, all active automobilists and owners of their own machines.

Takes Corner Too Soon—The first arrest in Buffalo of a motorist for turning a corner too sharply was reported last Friday, when A. Judson Wells, a well-known real estate man, was taken into custody by Patrolman Talty.

Fast Climb in Packard—Wayne Davis, of the Philadelphia Packard agency, broke the record up Wilkesbarre mountain last Sunday with three passengers in the 1906 Packard he was trying out. The previous best was 8 minutes 30 seconds. Davis drove his car from the foot of the mountain to the summit in 3 minutes 44 seconds.

Labor Union to Buy Car—The national convention of street railway employes, held in Chicago last week, appropriated $20,000 to buy ten automobiles to be used by the union to convey passengers wherever there is a street car strike, the profits from the fares to go back into the defense fund, where the $20,000 was taken from. The union already owns three automobiles, which were used during a strike at Saginaw, Mich.

Novel Use of Car—Members of the board of education of the state of New Jersey assigned to examine candidates for appointment to school superintendentships, worked an innovation last week by traveling from county seat to county seat in automobiles. The entire trip cost the state but $175, of which $125 was for hiring the machines. The same trip by railroad in former years consumed considerably more time and money.

Doctor's Queer Diagnosis—J. B. John, a well-known young business man of Oakland, Cal., is at death's door and Dr. M. M. Enos, who is attending him, attributes Mr. John's condition entirely to the excessive use of his automobile, which, he claims, has by the jar disturbed the nerves and the circulation of the blood. In speaking of the case Dr. Enos said: "I attribute Mr. John's condition to the reckless and excessive use of his automobile. He was constantly riding about in his machine and he did not pay proper attention to crossing tracks and looking out for holes in the street. His machine was a short runabout and there is more jar to the short than to the long machines. The result was that he constantly subjected his system to jar and jolt until this condition has arisen."

Quakers' Football Pad—The denizens of Philadelphia's automobile row are trying to eke out the weary between-season hours by indulging in football. A likely team of candidates is having three practices a week, and is trying to induce a similar team of New Yorkers to meet it on the gridiron.

Something Free—The New York and New Jersey Telephone Co., at the instance of A. R. Pardington, its contract manager, who was formerly chairman of the A. A. A. racing board, is distributing free among motorists its fine road map of Long Island, by making application to A. R. Pardington, 81 Willoughby street, Brooklyn.

Fighting Boodlers—The City Party campaigners, who are endeavoring to oust the boodlers from the Philadelphia city hall, are using the big Seeing Philadelphia rubber wagons every night to attain that end. Shortly after dark these big cars, each with a liberal supply of red fire and spellbinders, invade a ward where the machine is particularly strong, and broadsides of unanswerable arguments are hurled into the gang. The innovation is making a decided hit.

Glencoe Removes the Bumps—After winning its point in the court, which ruled that Glencoe would not have to remove its famous bumps which were put in to prevent automobile scorching, the village board has passed an ordinance extending the speed limit from 8 to 15 miles an hour. In notifying the Chicago Automobile Club of this action, Gordon A. Ramsey, president of the village board, claimed the honor for Glencoe of being the first city or town in Illinois to permit such a high speed by automobiles.

Women's Club Formed—A club exclusively for women is the latest thing in San Francisco motoring circles. At a meeting held this week a number of enthusiastic women drivers formed the Women's Automobile Club of California. Those present decided not to allow the men even to participate in the club runs. The following officers were elected: President, Mrs. Alfred J. Marsh; vice-president, Mrs. Fred Linz; secretary and treasurer, Mrs. J. Gabriel. Dues of $1 per month will be charged all charter members and after the charter is closed an initiation fee of $2.50 will be exacted, and the dues will be reduced to 50 cents.

Joke on J. D. R., Jr.—An amusing incident has just happened to J. D. Rockefeller, Jr., while touring in Switzerland. A party consisting of Mr. Rockefeller, his wife, two friends and a chauffeur, set out from Chamonex, intending to cross the Alps by the Tête Noire pass. They were unaware, however, that this pass is closed to automobiles and were only enlightened when a gendarme stopped them and refused to allow them to proceed further. As the gendarme refused to allow the car to be driven, eight horses were brought and harnessed to the machine, and in this strange manner the whole party arrived at Hotel Mont Blanc at Martigny. The

Digitized by Google

American entered heartily into the joke, paid the heavy fine with a smile and treated the gendarmes to a sumptuous dinner.

Boy Builds a Car—Sandusky, O., has a genius in the way of an original automobile builder. Harold, the 12-year-old son of Myron Caswell, of that city, last week surprised a number of citizens by completing a runabout. While it is an odd-looking affair, it shows the mechanical ability of the lad.

Buffalo In Map Business—President A. H. Knoll and Secretary D. H. Lewis, of the Automobile Club of Buffalo, are busily collecting information for the use of members of the club who desire to tour in western New York. Secretary Lewis intends to publish soon a road book which will give detailed information about a large number of runs near Buffalo and will include data about the Chicago-New York automobile route.

For Convict Labor On Roads—Wellington F. Loucks, organizer for the National Good Roads Association, is a good missionary. Already his efforts are productive of results. In Ohio he is succeeding in interesting many residents of that state in the bettering of the highways. At Lima three sessions were held at the Allen county court house. An organization was perfected with D. J. Cable as president, J. G. Roberts as vice president, M. Emmett as secretary and N. McBride as treasurer. A resolution was adopted which declares for convict labor to be utilized in making repairs and maintaining the roads throughout the state. A similar meeting was also held at Tiffin the latter part of last week.

Soaks Motorists—Complaint is made by motorists who use the Jeffersonville and Utica turnpike in Indiana that George Smith, owner of the road, is exacting too heavy a toll. He is said to be a motorphobist and to keep cars from using his highways charges 75 cents for driving 6 miles. He would rather they kept off the road, he says, than pay him his fee.

Suicide of Tour Survivor—W. B. Saunders, a well-known motorist and medical book publisher of Philadelphia, and the only representative of the Quaker City in last year's endurance run to St. Louis, committed suicide at Atlantic City last Saturday night. Mr. Saunders was suffering from a nervous disorder and was in charge of a physician and nurse at the time.

Make Light of Lights—The members of the police force of Washington, D. C., have been scored by the superintendent of police for their failure to enforce the regulations which require motorists to carry lights on the rear of their cars. The superintendent sets forth that numerous cars are without lights and there are others so dim that the numbers on the machine cannot be distinguished. The superintendent intimates that he will resort to radical measures if the motorists do not comply with the regulation.

Lights Blind Motorists—The governors of the Automobile Club of Buffalo have voted to ask the management of the Williamsville trolley line to put shades on the headlights of the Williamsville cars. It is claimed by the motorists that the lights are so strong that they blind motor car drivers and cause accidents.

Mrs. Carter Luxurious—Mrs. Leslie Carter, the actress, is showing New Yorkers just how much style can be put on in an automobile. She uses a new Decauville landaulet going to and from the theater, with a chauffeur in approved livery, as well as a tiger with silk hat and other appropriate togs to jump down and open the door for her.

Bisons Going To Race—Buffalo motoring enthusiasts have engaged a special Pullman to take them to the Vanderbilt cup race. The car will leave Buffalo on a regular Lehigh Valley train on Thursday night, October 12; will arrive in New York on Friday morning and remain there until evening, when it will be switched to Hempstead, L. I. After the race the car will be taken back to New York, where it will lie until Sunday evening. The party will arrive home Monday morning. The Cleveland Automobile Club will also be strongly represented at the race, while there has been a general exodus of westerners to the east to take in the big event.

INTERESTING STORIES PICKED UP IN MOTORDOM

"HERE'S a cat story for you," drawled the department store owner at the club. "This happened in town and doesn't take long to tell it. My man was driving me home the other night when Tabby ran out into the street. We scooped her up as prettily as I ever pulled a big fish out of the water with a landing net. But there was a grinding sound, mixed in with a few feline squeals and we came to a stop just as if we had put on the emergency brake. Tangled up in the chain was the finest lot of cat meat you ever saw and it was some time before we could clear our chain."

"My daughter gave a cow a fine ride the other night," said the banker. "It wasn't the usual kind of a ride where your car pushes a bovine along the public highway, but the animal actually occupied a seat. My girl was taking a spin with her chum and the usual male accompaniment. Going into a town they sighted five cows driven by a man and a boy. 'Honk, honk,' went the horn, but the girl was taking no chances, so she came to a dead stop while the road was cleared. Just as she started up one of the cows became curious and calmly walked in front of the machine. The bump followed and Mrs. Cow turned a complete somersault in the air, coming down in the empty seat. She was carried some distance before a stop could be made, then she rolled out of the car at the side, none the worse ofr her lively experience," and the banker never smiled as he finished.

THEY'RE telling a story in Chicago of a man buying an automobile in place of of an umbrella just to escape going home through the rain. J. W. Kiser is alleged to be the hero of the tale. Mr. Kiser at one time used to be the head of the firm that made Monarch bicycles and since the automobile came in he has ben prominent in his devotion to it. He is credited with owning something like seventeen cars, but like a boy with a choice collection of marbles, he is not averse to adding to his stock.

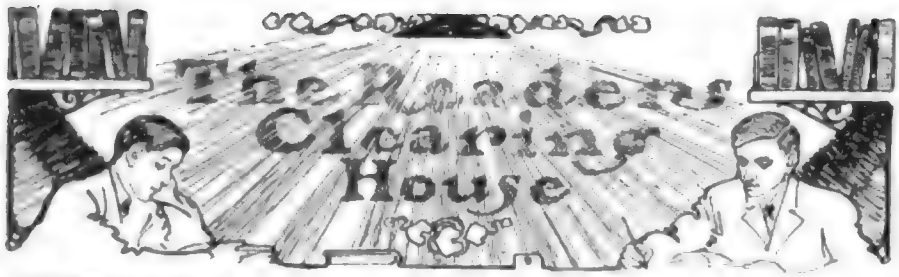
"I saw the whole thing happen in a garage down Michigan avenue," says the man telling the story. "It was raining and raining hard when Mr. Kiser scooted in to get out of the wet. He evidently was in a hurry to get home and paced up and down the store waiting for the rain to let up. While wearing out shoe leather in this manner he noticed a fine looking electric belonging to C. J. Metzger, who runs the place, a car that the dealer used for his own pleasure. 'That looks pretty good to me,' said Mr. Kiser. 'Is it for sale?' 'Everything I've got is for sale, if I get my price,' says Metzger. 'Well,' says the ex-bicycle magnate, 'I don't want to get wet going home and I've got to be getting along, so let me have that car.' So he outs with his check book, makes the paper good for a large bit of coin, steps nonchalantly in the rig, up jumps a chauffeur and Mr. Kiser is taken home, 15 blocks away, dry shod. I guess that's a record hard to beat."

IT takes something more than Jersey justice to feaze a Windy city motorist, as was evidenced last week, when the Hammonton sleuths apprehended Frederick H. Rawson, of Chicago, for traversing the sacred soil of the mosquito state without a Jersey license. When taken before Justice of the Peace Garton, Mr. Rawson explained that although he had written to the secretary of state for a license blank, and had received it, he had, through forgetfulness neglected to observe the other formalities and in consequence had started from Atlantic City without giving the matter a thought.

"I'm sorry," said Justice Garton; "but I'll have to fine you $50 and costs, Mr. Rawson."

"Very good," calmly replied the latter, stripping a hundred note from a plethoric roll he fished from his pocket, and handing it to the judge. Then from an inside pocket of his coat he produced some excellent cigars and treated all hands, finally inviting the whole crowd across the street to a moisture store, where he stayed long enough to knock a rather big hole in the change from the hundred-spot. Meanwhile the women in his car, which had been left standing at the curb outside the justice's office, had bought several pounds of candies and were treating all the children in the neighborhood. Altogether Rawson seemed to actually enjoy his first run-in with Jersey justice. The Hammontonians did, at any rate, and voted Rawson a good fellow.

Digitized by Google



FINISHING CYLINDERS

Toronto, Ont.—Editor MOTOR AGE—Will you explain the difference in the three terms applied to finishing the interiors of cylinders of gasoline engines; grinding, turning and reaming? Which of these three is the best, and what are the merits of one or the other? —N. Jones.

Turning a cylinder means to revolve the cylinder in a lathe and to take a cut with a tool having an axial movement. It is poor practice, as when bolted to the face plate it will probably be out of balance, and the spring of the tool and the cylinder will produce a tapered hole. In boring a cylinder a cutter is inserted in a rotating spindle, the cylinder remaining stationary. This produces a much better piece of work, although there is still the spring of the tool with which to contend. Another fault is the inability to produce cylinders of the same bore. Reaming a cylinder is performed by a spindle, having several cutters inserted in a head attached to it, revolving inside of the cylinder, which is stationary. By this means a very fine cylinder may be produced. Usually two reamers are used, the one for the last cut taking only a few thousandths of an inch out of the bore. The size across the reamer cutters is the size the cylinder is to be bored. The cutters working on both sides of a diameter do not tend to bore elliptical holes. Grinding is performed after the above operations. About 10/1000 inch is left to grind. The cylinder remains stationary and a little high-speed emery wheel is given a rotary motion. The wheel rotates at high speed upon its own axis, and its axis is given a rotary motion, the combined movements bring the wheel in contact with the inside of the cylinder leaving the finest finish possible.

MOTOR MEASUREMENTS

Reading, Pa.—Editor MOTOR AGE—Will you kindly inform me through your Readers' Clearing House the following: What will be the horsepower of a four-cylinder motor with 4½-inch bore by 4½-inch stroke at 1,000 revolutions; also 4½-inch bore and 5-inch stroke? What should be the diameter and weight of the flywheel on each? How should the inlet and exhaust valves close and open on both and what size should the valves be? How much compression in pounds should each have and how do you register compression with an ordinary steam gauge screwed in spark plug hole? If it would show 80 pounds on gauge turning the engine by hand, would it be counted as 80 pounds compression? How long should the connecting rod be on a four-cylinder engine with 5-inch stroke? What size inlet and exhaust pipe should be used?—SUBSCRIBER.

A four-cylinder motor 4½ by 4½-inch will develop 24 horsepower at 1,000 revolutions per minute. The 4½ by 5-inch motor at the same speed will produce 28 horsepower. In either case use a flywheel 18 inches in diameter with a rim weight of 75 pounds. The pressure as registered by a gauge placed in the spark plug hole will be less than the actual compression, due to the slow speed of rotation and to the space occupied by the piping to the gauge. If rotated rapidly the swing of the needle will make it register too much. An indicator should be used. A compression of 90 pounds is fair practice. To get this have the clearance 24 per cent of the total volume. The minimum length for a connecting rod when the cylinder center is not offset with relation to the crankshaft should be two and one-eighth times the stroke and is independent of the bore. For the inlet a pipe 1⅜-inch inside diameter is correct. The exhaust would better be 2 inches, although 1¾-inch will do. The valve diameters should be 1 9-16 inch and 1⅜ inch, respectively, for the inlet and exhaust. These apply to both sizes of motors. Have the exhaust valves open when the piston is distant 12½ per cent from the stroke end and close upon the upper dead center. Open the inlet at this time and continue until 8 per cent distant on the compression stroke.

WASHING AUTOMOBILES

Chicago—Editor MOTOR AGE—I can't keep the polish on the body work of my car. When purchased early this season, it had an eighteen-coat finish, which now is practically gone, leaving nothing but a dead finish. My carriages retain their gloss from season to season, while but a few months are necessary to destroy the finish of the best finished automobile. A friend, who is a local carriage builder, ventured the explanation that it is because the grease and oils from the motor and exhaust, which accumulate on the machine. To remove these soap is required. Most soaps contain more or less alkali. These soaps are invariably used in removing the grease. When applied, the alkali in the soap is attacked by or attacks—I am not sure which—the acid in the varnish, and the gloss is gone. Are there any soaps manufactured at the present time in which alkalis are not used or used so slightly that their attack on the lustre of the car would be considerably decreased? What is an easy method of analyzing soap to discover if it contains large quantities of alkali? In washing a highly finished automobile body, should the car be exposed to sunlight while the water is being applied? This is a point much discussed by owners of cars in this city, some contending that direct sunlight is necessary while washing, and others holding that the sunlight passing through drops of water on the body burns small spots in the finish and so partially ruins it.—W. T.

Soft soap and preparations for cleaning automobiles usually contain alkali, which attacks varnish. The mud itself has this effect, an account of the nature of the refuse forming the mud, which contains a high percentage of ammonia. Ammonia is an alkali and injurious to varnish. To test a soap for alkali form a suds of the soap. From a drug store get a strip of yellow litmus paper. If the suds are alkaline, this paper will turn red; if the color is retained, the soap is neutral or else acid. There is no great chance of its being acid, so the alkali test is sufficient. The body should be washed and dried with a chamois before exposed to the sunlight.

ANTI-FREEZING SOLUTION

MOTOR AGE recommends the following as the best anti-freezing solution, all things considered: Use 4½ pounds of pure calcium chloride to a gallon of warm water. Mix and filter before placing in radiator or tank. Replace evaporation with clean water and leakage with solution.

TOO MUCH AIR

Joliet, Ill.—Editor MOTOR AGE—I have just completed a month's trip in a boat, down the Illinois and Mississippi rivers, and not for an instant did I have trouble with my motor except very early in the morning or during the evening. It is a two-cycle motor, with make-and-break spark and a vaporizer instead of a carbureter. The motor would run at all times but was erratic and would seem to die down and then pick up. I had a magneto and took the pains to put in six dry cells, so am satisfied the spark was good. I am still in the dark as to the cause of the trouble, however.—J. W. B.

The probability is the air inlet was too large for night running. During the day the air, being warm, would mix with a smaller quantity of gasoline vapor than it would at night, when at this time of the year a cold vapor is given off the water. Either a larger feed of gasoline or a decrease in the air supply would have remedied the trouble.

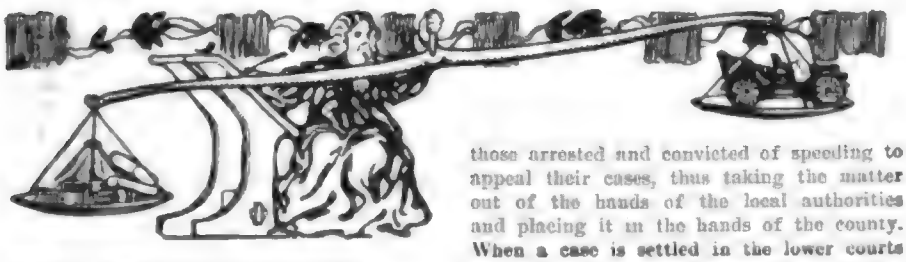
BROKEN CONDENSER

Brooklyn, N. Y.—Editor MOTOR AGE—Kindly let me know how to tell when the condenser of a non-trembler coil is broken down? My coil seems to miss and I cannot lay it to anything else. I have large spark at the contact, which I cannot account for any other way. Does not this signify a broken condenser or coil? I have a de Dion engine. Can this timer be changed for a trembler coil purchased at reasonable expense?—W. R. WICKE.

The trouble is probably in the condenser if a large primary spark occurs. Do not attempt to repair the coil yourself, as it will be much cheaper and decidedly more satisfactory to have a coil maker repair the condenser and add the vibrator. Repairs attempted by the owner of a machine, if he is mechanically inclined, and not an electrical expert, often result in worse conditions. Coils require careful workmanship and the condensers, in particular, call for exceptional care. Well repaired by a good workman means always repaired.

Digitized by Google

LEGAL LIGHTS AND SIDELIGHTS



NEW LAWS FOR CLEVELAND

Cleveland's chamber of commerce traffic regulation committee, which is framing an automobile ordinance for the city council, will probably present it at the next council meeting. It is announced that, among other things, it will provide for the division of the entire city into automobile controls in order that the speed regulations may be enforced more easily. One control will embrace the entire crowded district surrounding the public square and within this limit speed will be restricted to 4 miles an hour. In the balance of the business district, which will be clearly defined, there will be a limit of 8 miles an hour, while in the residence districts, a speed of 15 miles an hour will be permitted. By clearly defining these districts, there will be no possibility for offenders to escape on the contention that the term "business section" is misleading and not specific as has been done under the state law, which the officials tried to enforce. Another section of the ordinance will deal with the fixing of lights and it will require that every car be equipped with a lamp, which will illuminate the number at night. The numbers must be kept clean and the trick of smearing the number with oil so it will gather dust and become indistinguishable will not work in the future. The ordinance will also embody a clause preventing the owner of a car from allowing it to stand in the streets in one place for more than an hour. There will be a lot of other points which will tend to make the operation of cars in Cleveland more stringent than heretofore.

TO SPIKE COPS' GUNS

The rural constable, the man who lies in wait for his prey, concealing himself in the bushes along the roadside, is now to receive some consideration at the hands of the organized motorists of Massachusetts. The Bay State Automobile Association and the Massachusetts Automobile Club, through their legal representatives, have done heroic work in securing the repeal of certain drastic speed laws in something like eighteen of the towns and hamlets in this state during the past season, and now the legal committee of the Massachusetts State Automobile Association of the A. A. A., which, by the way, is composed of officers of the two above clubs and also of the Worcester Automobile Club, is to go a step further and wage a war of retaliation on the fly farmer cop. There is no question but what these officials have been reaping a harvest off the unwary and, in many cases, innocent motorists, and the latter have been forced to accept their fate in this line. A different tune will, however, be played in the near future, as efforts are to be made to induce those arrested and convicted of speeding to appeal their cases, thus taking the matter out of the hands of the local authorities and placing it in the hands of the county. When a case is settled in the lower courts one-half of the fine imposed goes to the town and the other half to the county, but where the case is appealed the entire amount of the fine goes to the county and the town loses, likewise the arresting officer who, in the latter case, gets only his witness fees, whereas in the former he generally gets a fair percentage of the amount paid the town. It can, therefore, be readily seen that if the idea of an appeal is generally carried out there will be little to be gained by the fly cops, and that with the fruits of their work going elsewhere they will soon cease their objectionable persecution, for persecution it is, of the motorists. Further than that, the receipts of the several towns will have a great falling off. Another thing which the state association is to attempt during the coming session of the legislature, is to secure the enactment of a law which will give the money secured from fines of automobilists for speeding to the state highway commission, to be used by it in the construction and maintenance of state highways.

SMASHED WRONG CAR

An Illinois farmer has been called upon to settle for damages done to an automobile which he supposed belonged to Pete Weast, of Peoria. The latter's car had whizzed by him a short time before, scaring his team into a hedge fence and breaking the harness. The damage was repaired, Weast apologizing and each proceeded on his way. Then the farmer discovered that one of his horses' feet was cut and the nearer he got to town the angrier he grew, so that when he came upon a new automobile in front of the Danforth house he secured a club and proceeded to knock it into a cocked hat. Then the awful discovery was made that it was not Weast's machine at all, the latter being miles away at the time. The farmer apologized, but that didn't go and he was hauled before 'Squire Snyder by the irate owner and made to settle for the damage.

NEW GEORGIAN MEASURE

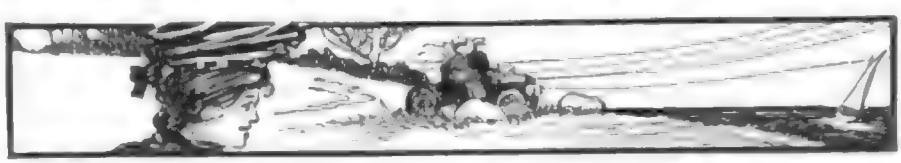
City fathers of Atlanta, Ga., are considering amendments to the automobile ordinance introduced by Mayor Pro Tem. Harwell. The main provisions of the Harwell ordinance are as follows: Creation of board of examiners, consisting of two experts and chief of police, who shall examine all applicants for licenses. Owners of automobiles must give bond of $500, recoverable by city for persons injured. All automobiles must carry speedometers. Conviction for violating speed law shall make suspension of license for 30 days discretionary with recorder. Second conviction shall make it discretionary with the recorder to revoke the license. All machines must be numbered, carry lights, visible in front and rear, and shall carry horn or bell or other means of sounding warning. No license to be issued to persons under 18 years of age or to persons lacking in sobriety or discretion. Violations of ordinance subject owner to maximum fine of $200 or 30 days in stockade, or both, in discretion of the recorder trying the case of law-breaking.

BOASTINGS OF A TRAPPER

Allan Peabody, the man who is posing as the phenomenal trapper of motorists who exceed the speed limit, has returned to Boston from New York, much inflated with his own importance, and makes the statement that he will shortly descend upon Chicago, and instruct the police of that city in the wonderful workings of what is claimed to be his perfect system of trapping, but which is, in fact, rather a crude system, one which can easily be counteracted. Peabody does not tell of all his experience in New York, including the case in which he failed to make a conviction, owing to a great diversity in his own evidence and the motor police who made the arrest. It seems that one of New York's finest arrested a motorist who passed through one of the Peabody traps and in court the policeman testified that the car was going 25 miles an hour and Peabody testified it was doing 40, according to his watches. The result was an acquittal. Now Peabody is to descend on Chicago. His system differs not materially from the general run of traps. Three stations are located along a certain roadside, each connected with the other by a push button and telephone. When a car is seen approaching the first station a preparatory signal is sent to the next one, and as it crosses an imaginary line the second signal is given and the watch is started. Should the watch indicate an excessive rate of speed as the car crosses the second line the signal to stop and arrest the offender is sent to the third and last station. This, in brief, is the game, and one which cannot be absolutely correct and reliable.

WASHINGTON WORRIES

Automobilists in Washington, D. C., who frequently drive their cars through Virginia, are somewhat worried over the fact that the regulation and possible prohibition of automobiles in Loudon county is being made the subject of numerous petitions circulated for signatures to be presented to the next legislature of Virginia, asking that laws be enacted either prohibiting their operation within the limits of Loudon county or demanding the enactment of a special law placing the matter under the control of the board of supervisors of the county.



Digitized by Google

Among Makers and Dealers

EXTERIOR OF THE TRAVELING SHOW CAR OF THE WINTON COMPANY

Joins Fisk—Louis Mansuy has joined the Fisk Rubber Co.'s forces as assistant to J. W. Bowman at the New York sales headquarters.

Hinckley in Line—Freeman Hinckley, son-in-law of Colonel Albert A. Pope, will, it is said, be appointed as manager of the Boston branch of the Pope company on the retirement of Mr. Foss.

Claims an Error—J. A. Cramer writes from Buffalo that he has not signed a contract to handle Marion cars for 1906. He will not be ready to announce his plans until the first of the month.

Kelly With Welch—The Welch people have secured a Boston agent in the person of Will R. Kelly, who has secured the establishment on Boylston street, formerly occupied by the Decauville agency.

Moves the Money Man—The auditing department of the Locomobile company has been moved from the New York branch of the factory. Treasurer Thomas M. Thomas accompanies the department.

Quitting Colonel Pope—The latest sensation in the Boston trade is the resignation of W. J. Foss from the management of the Boston branch of the Pope Mfg. Co., with which company Mr. Foss has been closely identified for the past 12 years. Mr. Foss' resignation is to take effect on November 1. At the same time comes the announcement that Archie Hughes, another strong Pope man who has held forth in Providence, R. I., for over a year, is likewise to retire from his position. Foss and Hughes are to go into the business on their own hook in one of the big cities in the east.

Winton Itinerary—The railroad car the Winton Motor Carriage Co. is using to jump around the country displaying the 1906 models was in Philadelphia, Saturday, Sunday and Monday, after having visited Detroit, Buffalo, Rochester, Boston, Providence and New York. At each place the novel idea made a great hit. The rest of the itinerary is as follows: Pittsburg, October 12 and 13; Columbus, October 14; Cincinnati, October 15 and 16; Indianapolis, October 17; St. Louis, October 18 and 19; Chicago, October 20, 21 and 22; Milwaukee, October 23; St. Paul and Minneapolis, October 24 and 25; Omaha, 26 and 27; Kansas City, October 28 and 29; Denver, October 30 and 31 and November 1. Salt Lake, Sacramento, San Jose, Fresno, San Francisco and Los Angeles will also be visited, the car getting back to Cleveland November 23.

Decauville to Brasier—H. A. Weaver has left the Decauville Automobile Co. to become associated with E. B. Gallaher, of New York, in the importation of the Richard-Brasier cars.

Aster in America—An American branch of the Aster company, of Paris, manufacturer of motors, parts and accessories, has been established at 1591 Broadway, New York. A. T. Myers is the manager.

Closed Boston Deal—The Ranier company has just closed a deal whereby the Morris Tyler Motor Co. has been named as agent in Boston for its product. Mr. Tyler was formerly the Peerless manager in Boston.

To Give Demonstrations—The Gearless Transmission Co., of Glens Falls, N. Y., organized with a capital of $500,000 to manufacture gearless transmission for automobiles and motor boats, under the Davis patents, is about to start one of its demonstrating cars through the west, visiting the makers and dealers in that section.

Locomobile Changes—A. J. Banta has succeeded B. G. Sykes in charge of the Chicago branch of the Locomobile company. Irving J. Morse takes the place left vacant by the resignation of William Morgan, superintendent of the Philadelphia branch. Mr. Morse was formerly identified with the London branch of the company. Banta's place territory will be taken care of by Kenneth M. Blake.

Testing the Packard 24—The 1906 24-horsepower Packard is being given a thorough test on the road. Early in June it made a run from Detroit to Chicago and return, 600 miles, over rough roads, in a running time of slightly under 22 hours. This performance was repeated a week later by different people and on neither trip were there any repairs or replacements, except to tires. Since then the car has been driven from New York to Boston and return and from New York to Philadelphia and return. Its latest feat, driven by W. R. Densmore, was to do the 76 miles from Powers' hotel, Rochester, N. Y., to Buffalo in 1 hour 57 minutes elapsed time, said to be the fastest the route has ever been covered in an automobile.

Holley Pushing Things—Holley Bros. Co., makers of the Holley carbureter, reports that its goods will be used the coming season on Fords, Wintons, Mitchells, Oldsmobiles and Waynes, contracts having been made with the manufacturers of these cars.

Adds Line—The Butler Motor Car Co., of Boston, Mass., agent for the Cleveland and Pierce-Racine cars, has undertaken the agency for eastern Massachusetts for the commercial cars of the Rapid Motor Vehicle Co. of Detroit and Pontiac.

Denial from R. E. Hardy Co.—The R. E. Hardy Co., of New York, maker of ignition plugs and automobile gas engine accessories, wishes to deny statements to the effect that the selling end of its business has been placed in outside hands. It adds that it believes it can best serve its customers through direct relations. The Sta-Rite ignition plugs are made in forty-seven varieties.

Woods Building—Work has started on the new factory of the Woods Motor Vehicle Co., at Twenty-fifth street and Calumet avenue, Chicago. The new building will be five stories and the capacity of the plant will be increased three-fold. It is expected that 500 cars will be turned out in 1906. The move from the old plant at 110 East Twentieth street will be made about April 1.

Kennedy Car Tested—The test given the automobile recently invented by Thomas J. Kennedy, of Cortland, N. Y., is reported to have proved satisfactory and the backers have formed a stock company with $150,000 to put the machine on the market. The company will probably buy the plant of the Ellis Omnibus and Cab Co. and begin the manufacture of automobiles on a large scale. The experimental machine is finished in green, has two seats and several novel features. There are no cams, oil cups or valves. The car can be run on either one, two or three cylinders. There is but one control lever.

Adds Domestic Car—Though Smith & Mabley were the first of the importers to recognize the value of American workmanship and factory methods as applied to motor car manufacture, it was for the Decauville Automobile Co. to take the initiative in adding a domestic car to its imported line. The enormous increase in its selling, storage and repair plant through the building of the great garage at Broadway and Fifty-fifth street, New York, which will be ready for occupancy by November 15, will enable the officers to carry out long cherished ambitions in the direction of broadening their business. Negotiations with the H. H. Franklin Mfg. Co., of Syracuse, which have been in progress for over a month, were concluded last week by the signing of a contract whereby the company becomes the metropolitan agent of the Franklin. The expressions of both sides at the completion of the deal indicate mutual satisfaction and great hopes for the future. The Decauville company has also arranged to enter largely into the exportation and sale of American and im-

Digitized by Google

ported sundries. The building now in course of construction will furnish storage for 250 cars. The lower stories, however, have been so built that four more may be added, which will raise the storage capacity to 500.

Studebaker Branch—Studebaker Bros. have leased the Christian Scientist church property, 137-143 West Forty-eighth street, New York city, and will remodel the property for garage purposes. The building has a frontage of 80 feet and a depth of 100 feet.

Has Whole Building—Albert B. Ashforth leased for the Broadway Reliance Realty Co. the entire building on the southeast corner of Broadway and Sixty-fourth street, New York, to the Autocar Co., which will use it for salesrooms, offices and repair department.

Stock Company Now—B. A. Miner, the Hartford, Conn., agent for the Knox and Pierce Arrow motor cars, has organized his concern into a stock company, and H. C. Judd, who owns the land at the northeast corner of Allyn and High streets, will erect a building for him.

Increase Capital—A call has been issued for a meeting of the stockholders of the Crawford Automobile Co. to pass on the matter of increasing the capital stock of the company from $50,000 to $100,000. Work is about to begin on the addition to the plant. The new wing will be 100 by 56 feet, three stories, equipped with elevators, offices, etc.

Franklin Output—The H. H. Franklin Mfg. Co., of Syracuse, N. Y., is reported to be planning to turn out from 2,000 to 2,500 cars next year and is hiring all the skilled mechanics it can get, 850 men now being employed. Upon three of the cars the prices have been advanced $150, $300 and $500, respectively. The company is building most of the four-cylinder light touring car type.

Want Repairs, Too—There is quite a movement on foot among automobilists in Pittsburg to secure more satisfactory rates at the garages for storage, etc. At present the rate for dead storage is $8 per month and for live storage $30 per month. The motorists believe that this latter charge should include a guarantee for all reasonable repairs, except tires. As the demand for storage is increasing rapidly, it is quite likely that the dealers will accede to this request next year, for, although they claim there is little money to be made in live storage in Pittsburg, they find that it brought them a big lot of sales.

Show Dates—There will be nine big shows this winter—three in this country, one in France and five in England. Two of the American shows will be held the same week—January 13-20—the A. L. A. M. in Madison Square garden, New York, and that of the Automobile Club of America in the armory of the Sixty-ninth regiment, New York. The third one will be the national show of the National Association of Automobile Manufacturers in the Chicago Coliseum the week of February 3-10. The first of the foreign exhibitions will be the Olympia, held in London November 17-25, and the Stanley, which will run opposition during the same week. The Paris show will be held the week of December 8-24, while the Crystal Palace show in London opens January 26 and runs through to February 3. The other English show—at Agricultural hall—will be held the week of March 24-31.

Erecting Plant—The Western Malleable Steel Co. is erecting a plant at River and Clark streets, Detroit, and will make a specialty of automobile work, for which a special grade of European iron will be imported and treated by a foreign process. The enterprise is backed by Michigan capitalists and is under the management of Harry Gordon.

Incorporated—The business conducted by William Roche at 52-54 Park place has been incorporated and is now owned by the William Roche Dry Battery Co., which has a full paid up capital of $25,000. The officers of the company are: William Roche, president; Ernest A. Lowe, vice-president; C. Laton Ford, treasurer; William C. Hubbard, secretary.

Ready in Rome—The Long-Turney Co., just incorporated at Rome, N. Y., for the manufacture of automobile radiators, hoods, spiral tubing, brass and copper monograms and other supplies, expects to start operations in 3 weeks. The machinery has been ordered and is on the way. At the start twenty hands will be employed.

Change Site—The Mar-Del Mobile Co., Baltimore, which announced its intention of building a garage on the east side of Cathedral street, has decided to change its site for the structure and has acquired the lot at the southwest corner of Mount Royal avenue and Charles street. Quarters are to be planned on the second floor for the Automobile Club of Baltimore.

Gear Company Prospers—The Syracuse Rawhide Co., manufacturer of gears, at a recent meeting at Syracuse voted to increase its capital stock from $25,000 to $100,000. Henry J. Ormsbee has been offered the position of general manager of the company and has the offer under consideration. It is the plan of the concern to install additional machinery and increase its output. The company also has under consideration the erection of a new factory.

They Wonder—Officials of the American Locomotive Co., of Schenectady, N. Y., profess to know nothing of the American Locomotive Automobile Co., which has filed articles of incorporation with a capital stock of $300,000.

Wants Site—A company, which manufactures gasoline engines, desires to locate in Wauseon, O. The company wants a free site, with the understanding that if the company fails to pay a certain amount of wages for 5 years, then the site will revert back to the city.

Olds New York Agency—For the coming season the Oldsmobile agency in New York will be handled by the Oldsmobile Co., of New York. The agency will be owned by John T. Cutting, who introduced the Cadillac in New York. The salesroom has been located at 1653 Broadway.

New Building—The Detroit Auto Specialty Co., now at 16 Sherman street, has commenced the erection of a large factory at Greenwood and Baltimore avenues, near the plant of the Cadillac Automobile Co. The company employs thirty men now, but when it moves into the new place November 10 it will increase this number to 200.

De Dietrich Deal—Baron Adrien de Turckheim and W. M. Letts have just concluded a deal whereby the American agency of the de Dietrich will at once go to Allen Halle & Co., of New York, who formerly imported the Mercedes. The de Dietrich garage on West Forty-eighth street is to be closed and new hearquarters opened on Fifth avenue.

Want Makers Bonded—Those farmers down near Mexico, Mo., have held the anti-automobile meeting that was called some time ago. They wanted the automobiles forbidden the use of country roads, but compromised by drafting thirty-six pages of resolutions to the state legislature, recommending, among other things, that the automobile makers be required to give bond for any damages which may result from the use of their products.

Interior View of the Winton Show Room Railroad Car

Digitized by Google

PIONEER MAKERS—ELWOOD HAYNES

Frank Nutt driving a 50-horsepower Haynes car into fourth place in the American eliminating trial for the Vanderbilt cup race calls to mind the first run ever made by an automobile constructed by Elwood Haynes. That was in July, 1894, and the machine, claimed to be the first gasoline automobile constructed in the United States, made its debut on the roads running out of Kokomo, Ind., where is located the plant of the Haynes Automobile Co. The car was towed out into the country behind a horse-drawn carriage in order to avoid the crowds that immediately assembled on the streets when the rig was taken out of the shop. Once out on the highways, the motor was started by throwing it into clutch with the carriage, and then pushing the latter a short distance. The clutch was then disengaged and the motor continued to run. With the car under headway, three persons mounted into the seat and rode for a distance of about 2 miles further into the country. The car was then stopped, turned around, and started once more for Kokomo, running the entire distance—about 5 miles—carrying two persons without a stop. This demonstration proved that the motor was of insufficient power, especially on the hills, as the total weight of the car was about 820 pounds. The speed on the level was only about 7 or 8 miles an hour. The 1-horsepower motor was soon afterwards replaced by a 2-horsepower motor, and the machine equipped with 36-inch wheels and 2-inch pneumatic tires, which increased its speed to about 12 miles an hour. The best time made was 5 miles in 26 minutes over a country road, which was considered good.

From his boyhood days, Mr. Haynes had a mind mechanically bent. He was born at Portland, Ind., in October, 1857, his first schooling being secured in the public schools of that place. He early developed a decided taste for the sciences and their application to practical affairs and at the age of 18 he had a fairly good knowledge of elementary chemistry and elementary physics. At the age of 20 he entered the Worcester Polytechnic institute at Worcester, Mass., from which he graduated in 1881.

For a number of years after graduating Mr. Haynes was in the natural gas business, and while engaged in this the idea came to him for the first time of building a vehicle which would successfully replace the horse on the highway. In driving from one gas well to another while following his profession, the need of such a vehicle was forcibly impressed upon his mind when he noticed that the long drives tired his horse so that he could only go home slowly in the evening, even though the roads were good. The idea once planted in that fertile brain of his, he turned the scheme over and over in his mind during 1888 and 1889 but it was not until 1893 that he was able to put his plans into execution and begin the actua construction of a self-moving machine. H considered the feasibility of electricity an rejected it; then he went over the steam proposition with the same result, finall settling on gasoline as being the mos feasible basis for power, all things con sidered. The gasoline motor at that time however, was a very crude affair and no at all adapted for driving a motor car. Th lightest obtainable on the market at tha time was a single-cylinder, two-cycle gaso line engine of 1 horsepower built by th Sintz Gas Engine Co., of Grand Rapid Mich. Mr. Haynes' first idea was to buil an extremely light car, weighing not mor than 300 or 400 pounds, but after purcha ing the motor and noticing its terrific vibra tion when running, he decided to build much heavier machine. Materials were diffi cult to obtain at that time, but after con siderable trouble the car was finally assem bled. The framework was made of stee tubing brazed into steel castings, whic Mr. Haynes believes, is the first applicatio of steel castings to the construction of th automobile.

The year following the trial of the fir car a partnership was formed between M Haynes and Mr. Apperson and continued fo about 2 years when a corporation was organ ized under the name of the Haynes-Appe son Co. September 1 there was another change and now the Haynes car is manu factured by the Haynes Automobile Co., M Haynes still retaining the presidency bu turning the general managership over V. E. Minich in order that he may hav more time to devote to the mechanical de tails of the car made by his compan

THE LAST CAR MR. HAYNES BUILT—1906

THE FIRST CAR MR. HAYNES BUILT—18

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Dayton, O.—Joseph Wysong is sole owner and manager of the Day and Night Auto Co.

Dalton, O.—The Miami Motor Car Co. has added a large office on the second floor of its garage.

Lansing, Mich.—The Motor Car Co., of Detroit, has been incorporated with a capital stock of $150,000.

Stoughton, Mass.—James Lehan has erected a garage and has the agency for the Pope line of cars.

Two Rivers, Wis.—The Wisconsin Automobile Supply Co. has been recently established here with a capital stock of $5,000.

Westfield, N. Y.—An automobile factory is endeavoring to secure a location here, good railroad facilities being the chief inducement.

Newton Center, Mass.—H. D. Church has purchased from J. W. Crowell the garage situated at Commonwealth avenue, near Walnut street.

Pontiac, Mich.—F. W. Oliver, of South Bend, has submitted a proposition to the city council to build a factory here to make automobile tires.

Findlay, Ohio—The Detroit Automobile Co., which was recently organized with a capital stock of $100,000, is endeavoring to secure a location here.

Sioux City, Ia.—H. Bernard Hallam, formerly of Seattle, Wash., has opened a garage at 616 Fifth street. He will represent the Reo in northwestern Iowa.

Rochester, N. Y.—It is reported that the Covert Motor Vehicle Co.'s plant will be moved here from Lockport. Most of the stockholders are Rochester people.

Newport, R. I.—Thomas G. Owen, expert machinist, has gone into the automobile business, opening a garage at 379 Thomas street. He has taken the agency for the Rambler.

Hartford, Conn.—Two patents have been granted to the Electric Vehicle Co. during the past week, one for automobiles and self-propelled vehicles and parts thereof, and the other for motor boats and parts thereof.

Washington, D. C.—The National Automobile Co. has filed a lawsuit against the Cahill Automobile Co. to recover possession of a Buick touring car, valued at $1,400, which the plaintiff contends the defendant unlawfully holds.

Pittsburg, Pa.—The American Motor Co., which was recently organized in Pittsburf, is getting ready to build a large three-story brick garage in Diamond street. It will be within a stone's throw of the heart of the office section of the city of Pittsburg.

Milwaukee, Wis.—The Kruger Mfg. Co. has been organized to build automobiles and conduct a general manufacturing and repair business. A four-story building is to be erected by the company at the foot of Biddle street. Julius Kruger is the president of the company and Ross McCoy treasurer.

Coldwater, Mich.—C. R. Johnstone has secured the local agency for the Jackson automobile.

Sea Breeze, Fla.—The Clarendon garage, connected with the Clarendon hotel, will be opened on December 1.

Boston, Mass.—Charles Blaney, late with the Boston Ford agency, has accepted the Boston agency for the Corbin car.

North Attleboro, Mass.—J. P. Ballou is the agent for the Pope cars and manages a complete garage at 175 Washington street.

Jefferson, Ia.—Franklin & Louk have dissolved partnership in the Jefferson garage, leaving Charles Louk as sole owner and proprietor.

Minneapolis, Minn.—Work has started on the new garage of L. H. Fawkes at 111 Sixth street. It will be 50 by 150 feet and is expected to cost $16,000.

Detroit, Mich.—It is possible that the Union Trust Co., executor of the Alfred E. Brush estate, will build an automobile garage at Woodbridge and Brush streets.

Columbus, O.—Local capital has bought the Springfield Automobile Co., of which C. C. Bramwell is the head, and will move it to this city. Mr. Bramwell will continue as general manager.

RECENT INCORPORATIONS

Omaha, Neb.—The Karbch Automobile & Vehicle Co. has been incorporated with a capital stock of $75,000. The firm will engage in the manufacture and sale of automobiles and other vehicles.

Albany, N. Y.—The Buffalo Auto Body & Trimming Co., of Buffalo, has been incorporated with a capital stock of $25,000, to engage in the manufacture of automobile bodies and seats.

Albany, N. Y.—The Esco Mfg. Co., of the Bronx, has been incorporated with a capital stock of $10,000. The company will engage in the manufacture of motors, vehicles and cycles.

Albany, N. Y.—The Barnes Gear Co. ,of Oswego, has been incorporated with a capital stock of $50,000. It will manufacture steering gears and supplies for automobiles.

Boston, Mass.—The Courier Motor Car Co. has been incorporated with a capital stock of $15,000. The company is to engage in the sale of motor cars.

Augusta, Me.—The Gearless Transmission Co. has been incorporated with a capital stock of $500,000, to engage in the manufacture of motor vehicles.

Lansing, Mich.—The Matheson Motor Co. has been incorporated and has increased its capital stock from $600,000 to $1,100,000.

Columbus, O.—The King Mfg. & Garage Co., of Springfield, has been incorporated with a capital stock of $20,000.

Albany, N. Y.—The Griswold Mfg. Co. has been incorporated to deal in automobiles. The capital stock is $25,000.

Albany, N. Y.—The Greene Motor Car Co., of Newark, N. J., has been incorporated with a capital stock of $100,000.

St. Joseph, Mo.—The St. Joseph Automobile Co. has been incorporated with a capital stock of $2,000, all paid.

Austin, Tex.—The Waco Auto & Electric Co. has been incorporated with a capital stock of $5,000.

Los Angeles, Cal.—The Golden State Motor Car Co. has increased its capital stock to $500,000.

Lawrence, Mass.—A brick garage has been erected by the Broadway Motor Car Co. at 174 Broadway.

Washington, D. C.—E. A. Beekman has filed a lawsuit against the Auto Transit Co. to recover an account of $325.

Bay City, Mich.—W. F. Flynn, manufacturer of the Falcon motor car, is seeking a location here for a new factory.

Boston, Mass.—The Welch Motor Car Co. is to establish a branch in this city. W. J. Kelly is to assume the management.

Sioux City, Ia.—The Hathaway Automobile Co. reports having sold eighty-eight Cadillacs in and about Sioux City this season.

Madison, Wis.—Among the incorporations is that of the Wisconsin Automobile Co., of Two Rivers, which has a capital stock of $5,000.

Cincinnati, Ohio—The Acme Motor Co. has purchased a piece of ground on Sycamore street on which a modern fireproof garage will be erected.

Sioux City, Ia.—William Warnock, on Fourth street, is representing the Rambler, Ford and Olds in northwestern Iowa and northeastern Nebraska.

Philadelphia, Pa.—F. C. Michaelson is to build a garage, two stories high, 23 by 42 feet, on the west side of Fifty-first street, at a cost of $2,000.

Kenosha, Wis.—The Badger Brass Mfg. Co. is building an addition to its plant, which will practically double the size and capacity of the Solar lamp factory.

Sea Breeze, Fla.—Egan & Grinnell, who have had a successful season with their garage at Narragansett Pier, R. I., will inaugurate the Clarendon Auto Garage here.

Somerville, Mass.—A commodious garage, with a complete repair outfit, has just been opened. It is situated at 15 Glen street and is under the management of H. B. Ruggles and John E. Rogers.

Milford, Mass.—Two garages have been opened here. The Milford Auto Station is under the management of Frank H. Marshall and the Milford Automobile Machine Co. is run by W. Hadley, F. S. Howard and W. H. Baker.

Detroit, Mich.—The City and Suburban Homes Co. sold two factory sites on the northeast corner of Maybury, Grand avenue and the Grand Trunk Railway to the Hayes Mfg. Co., manufacturers of automobile parts, and to the Northway Motor Co. of this city.

Detroit, Mich.—Holly Brothers are erecting an addition to their factories at 672 Beaubien street. The new building is 25 by 90 feet and is to be a brick structure with concrete floors. The company's offices will be located upstairs, while the first floor will be used for experimental work.

Digitized by Google

WINTON

Economy of Up-Keep vs. Wasteful Working Parts

UP-KEEP expenses are **increased** by the use of Wasteful Working Parts. For instance, the Double Chain Drive.

Cars using the Double Chain Drive have two **exposed** chains and four **exposed** sprocket wheels.

And, since these chains and sprockets are **always exposed**; since they cannot be protected from dust, dirt, grit, mud and rain; and, since being unprotected, they **cannot be lubricated**—except by axle grease that merely picks up dirt and grit and grinds it into the chains and sprockets, thereby **eating them up**; it stands to reason that—

These chains and sprockets **wear fast,**

1. Causing friction, backlash, climbing, binding, jumping and breaking; hence

2. Using up much of the motor power that should be used in driving the road wheels; therefore **wasting money** that you spend for gasoline and oil; and

3. Necessitating the **purchase** of new chains and sprockets—another **bill of expense.**

Also, double chains and quadruple sprockets add greatly to a car's bulk and weight, are unsightly, prevent the use of handsomest body designs and endanger the safety of every woman who gets in and out of the tonneau over the awkward sprocket boxes.

Now, what about the Winton Model K drive?

In this car the engine's power is carried **direct** from motor to driving axle through **one, single, flexible, carbon steel drive shaft and two** hardened and ground universal couplings. That means strength, cut-down friction, clean body lines, safety to tonneau passengers and simplicity.

These universal joints are **enclosed** in absolutely tight metal cases that keep dirt, dust, grit, mud and rain OUT, and lubricant IN. Yes, IN, because these cases contain lubricant and, therefore, these joints are **always oiled.** That means friction, wear and noise PREVENTED, and the engine's power USED in driving the car and not in overcoming friction or resistance.

But—note this. The direct shaft drive **can be ruined** by being subjected to sudden, violent strains. For instance, by the non-oiled clutch, sliding gear transmission system, which, when thrown in, wrenches the drive shaft abnormally.

But there is **no such danger on the Winton.**

The new Winton Model K has an individual clutch transmission. Its clutches run **always in an oil bath.** A film of oil between the clutch cones must be squeezed out before the clutch takes firm hold, and this oil film permits the cones to slip intentionally, just for a second, when the power is applied. That **prevents wrenching.** Then all the engine's power is **directly used** in propelling the road wheels, and, meanwhile, the drive shaft and universal joints have begun to work gradually and have suffered **no strain.**

The individual clutch transmission is the **only** transmission recognized by mechanical science as **legitimate.**

The use of automobile power reaches its maximum efficiency—as you can readily see—when the individual clutch system and the single, direct, flexible shaft are **used in conjunction.**

And you get this perfection on the Winton **only.**

There are other ways in which the new Winton Model K cuts down Up-Keep expenses. Let us tell you all about them. Catalog No. 2 is ready.

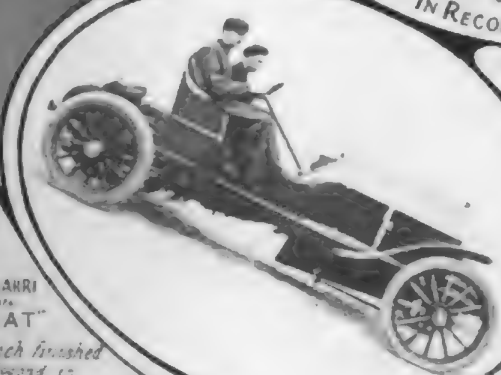
Model K—Four cylinder, vertical, water cooled; 4¾-in. bore; 5-in. stroke. Shaft drive. Individual clutch transmission. Winton Air Governor. Most approved systems of lubrication, ignition and carburation. Seats six. $2,500, f. o. b. Cleveland.

THE WINTON MOTOR CARRIAGE CO., Member A.L.A.M. **Cleveland, O., U. S. A.**

Digitized by Google

FIAT

CHEVROLET
IN RECORD BREAKING "FIAT"



NAZZARI
IN
"FIAT"
Which finished
Second in
GORDON BENNETT
RACE

CEDRINO
IN
"FIAT JR."

¶ What better evidence can be given of the superiority of these famous Italian Cars than their record at the Gordon Bennet Race? Not only did they capture second and third places, but Lancia made the two fastest circuits of the way.

FIAT Cars Now Hold FIVE WORLD RECORDS

1. MILE TRACK RECORD (Gasoline)
   52⅕ seconds, made by Chevrolet in Major Miller's "FIAT" at Morris Park.
2. WORLD'S MIDDLE WEIGHT RECORD
   55⅘ seconds, made by E. Parker, at Morris Park. July 4th.
3. WORLD'S LONG DISTANCE ROAD RECORD.
   260 miles, made by Lancia at Brescia. Average speed 72½ miles per hour.
4. MOTOR BOAT RACE ACROSS THE MEDITERRANEAN (200 miles)
   Won by "FIAT X" in 12 hours, beat nearest competitor 4 hrs. 50 sec.
5. WORLD'S MIDDLE WEIGHT 50 MILE RECORD.
   53 minutes, 14⅖ seconds in "FIAT JR." (only 24 H. P.) at Long Branch, August 22d.

HOLLANDER & TANGEMAN, 3 and 5 West 45th Street, NEW YORK
Sole American Agents — Licensed Importers Under Selden Patents

Digitized by Google

AUTOMOBILES DE DIETRICH & Cie

130 h. p. Racer

Selected to represent France in the W. K. Vanderbilt, Jr. Cup Race on October 14, 1905

Holds 100-50-1 Mile World's Record

Winner with 40 h. p. regular stock Touring Car of ten days' endurance—Coupe des Pyrenees —against 68 other cars

Second in the Florio (Italy) Cup Race

Ear'y Delivery

Demonstrations by Appointment

DE DIETRICH AMERICAN BRANCH: 215-217 W. 48TH ST., NEW YORK

PHONE 974-38

YOU may think that there is more theory than practical value in our claim that the Unit Power Plant and Three Point Support of the STEVENS-DURYEA deliver more power to the wheels per hundred pounds weight of the car, but —think a minute. Our engine isn't as large as the engine in some of these other cars that we beat so easily—we aren't running it at abnormally high speed nor high compression in order to squeeze the utmost power possible out of it—we don't claim over twenty horsepower and we aren't getting over twenty horsepower, yet everyone knows that for its size, the Stevens-Duryea is the fastest car on the road, and is the best hill climber on the market to-day. If we haven't got as big an engine as the other fellow, how do we produce more RESULTS unless our claim as to DELIVERED horsepower is based on fact?

A little consideration will show you that there must be "Something to it, after all."

J. STEVENS ARMS & TOOL CO.

705 MAIN STREET CHICOPEE FALLS, MASS.

Member Association Licensed Automobile Manufacturers

Digitized by Google

WHEN YOU PAY MORE

Model 4B

$1500

for a touring car or runabout than **our** price, you are paying for features which you get without extra charge in the

An ideal touring car at an ideal price. 18-20 h. p. (4-cylinder vertical motor), $1,500. One h. p. for every 85 pounds of weight. *No radical features or untried devices for which you will have to pay for the experiments.*

It embodies the best features of the most famous cars, but it is different in at least one essential—price. A 4-cylinder touring car at $1,500 seems unusual, you say? It is *more* than unusual—*it's wonderful.*

MITCHELL

It is not only **"the car you ought to have at the price you ought to pay"**

Model 2B

$750

2 cylinder, 9 h. p., vertical motor, mounted in front. This Runabout is as carefully designed, as up-to-date and smart in appearance as any three or four thousand dollar car ever built. It has ample power for all conditions of road and its hill climbing abilities are unsurpassed. It is *all* that *any* man may want in a Runabout.

It is **more.** It is absolutely the best car—the most perfectly constructed—the most simple to operate and the most stylish in appearance on the American market. You cannot **possibly** do better than to buy a **Mitchell.**

WRITE FOR CATALOGUE

MITCHELL
Motor Car Co.
RACINE, WISCONSIN

Member American Motor Car Manufacturers' Association, Chicago

Peerless

1906 Peerless at the end of the Buffalo trip

The Peerless 1906 Model

is our attempt to make the best car that can be built. Frankly, we are proud of it. The new car has been tested out under the most difficult conditions we could devise. After days and weeks of the hardest kind of tests on the hills and on the level, in which it came out with flying colors in every case, it was sent 400 miles over the road, through the mud. Twenty-eight miles an hour from Cleveland to Buffalo over rough and muddy roads with four people in the car is certainly more than creditable for the first car finished. Especially since it came back to the factory in the same perfect condition that it went out, and that without an adjustment.

SEND TODAY FOR 1906 INFORMATION

Surely the new model of the same car that holds the stripped touring car record of 58 3-5 seconds and the 1000 mile non-stop record, ought to be thoroughly considered if you are looking for the best car.

THE PEERLESS MOTOR CAR CO.

Lisbon Street, Cleveland, Ohio

Member A. L. A. M.

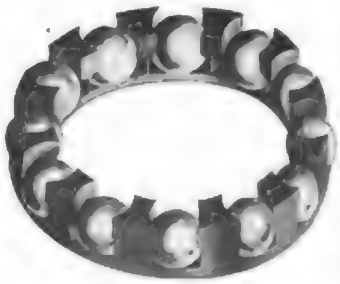
Digitized by Google

SILENT TYP

Standard Roller Bearing Co.

48th and Girard Ave.

Philadelphia, Pa.



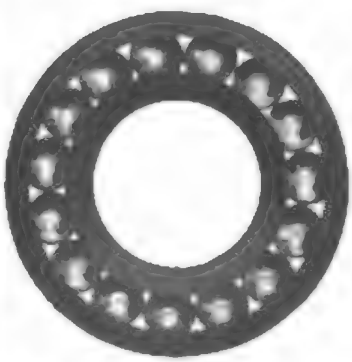
CAGE OR SPACER

Largest plant in the world for exclusive manufacture of

ANTI FRICTION BEARINGS AND AUTOMOBILE AXLES

Total space occupied, 145,000 square feet. Main Machine Shop, 150 ft. wide by 500 ft. long. Steel Ball Factory, 70 ft. wide by 300 ft. long, three stories in height. Steel Converting and Tempering Plant, 50 ft. by 110 ft. Power Plant, Engines and Generators, 800 H.P. Steel Ball Output, 2 million balls daily.

WE MAKE ANNULAR BALL BEARINGS



FULL TYPE

We will positively guarantee prompt deliveries

Send for Annular Bearing Catalog

Standard Roller Bearing Co.

Philadelphia, Pa., U. S. A.

FLANGED BEARING
(Either Full or Silent Type)

Google

THOMAS 1906

A Personal Statement from Mr. E. R. Thomas

"Hitch Your Wagon to A Star"

My friends have long known that it has been my cherished ambition to build the best car in the world or, at the very least, one of the greatest.

I do not mean the fleeting reputation gained by enormous outlays for advertising and the performance of road and racing stunts by highly paid employees with special cars or well groomed individuals of social and business prominence always accompanied by factory experts. But I do mean the permanent reputation founded by actual performance in the hands of the general public which comes solely from intrinsic merit.

Years ago—surrounded by noted mechanical talent—we built one of the greatest bicycles of the world, which was better than any foreign continental production. The principles of automobile construction are the same except mechanical power is substituted for human. Since 1897 I have been building vertical gas engines by the thousands. Then why not at least one of the best automobiles?

I knew that with us it was only a question of design, material and time. It was not a question of experience in fine workmanship. We had that. Nor was it a question of profit for that would surely follow.

In 1904 daylight began to appear. Two cylinder vertical motors were the vogue. I went one better and built three at the same price. It was far superior to any two cylinder proposition on this side of the world or the other.

Design was greatly improved, crude and accessory manufacturers improved their material, the car proved highly efficient and the stars we had "hitched to" seemed nearer and brighter. It was in the year that I designed the safety device which has saved lives—also the curved dash with small tool lockers and the chain pull that equalizes the strain on the main bearings. We also used chain oilers on the crank and transmission shafts.

In 1905 we built a four cylinder car which, with nominal advertising, no traveling agents, and no performance of road or racing stunts, requiring special cars and highly paid factory experts, we again caught the public favor and quickly sold four hundred big touring cars—no more and no less. We were compelled to refuse many additional orders, some with bonuses above the price of from $250 to $750.

It was in this year I patented the now famous dust proof body and introduced lockers and rails for wraps and many other features of comfort and efficiency.

The result in every way exceeded my most sanguine expectations and the star shone still brighter and was much nearer.

Our success was so great I have about completed a new model fire-proof factory, constructed entirely of concrete, steel reinforced. The mechanical equipment has been greatly increased. The capacity is one thousand fifty horsepower automobiles.

I have the same superb mechanical force who are inspired by the same ambition and who are co-operating with me loyally and energetically to realize our high ideals and which we believe will be fully realized in the 1906 Thomas Flyer, which has been greatly improved in every detail of workmanship, material and design—notably:

Forged I beam axles—great, strong steering knuckles—steering apparatus all forged. No brazed joints. Cross steering rod behind front axle. Large separate motors. Mechanically operated valves opposite sides. Improved radiator fan and pumps. A disc clutch that will not slip under any condition when engaged. Four forward speeds—with one Hyatt roller and five Hess Bright bearings. Altogether fifteen Hess Bright ball bearings, one Hyatt roller and two ordinary ball bearings—twenty-one anti-friction bearings in all. A beautiful new dash and body seating five or eight as desired. Four great big wide brakes—the foot alone will stop a loaded car on a twenty-five per cent down grade.

I am very proud of the New 1906 Thomas Flyer—and I believe the American public will be proud of it. The best foreign cars may have some few unimportant details that we haven't got—and we have some important ones they do not possess. But we have put the design, material, workmanship and money into this car to make it at least equal to the highest priced car in the world, and I believe that the verdict of a just people will, based upon intrinsic merit solely, place the 1906 Thomas among the world's greatest and best, and as such I present it.

E. R. THOMAS,

For The E. R. Thomas Motor Company.

E. R. THOMAS MOTOR COMPANY

1202 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google

A SOLAR SERMON

The Fatal Motor-Car Accident to Mr. Henry Winch.

Mr. Henry Winch, the Unionist Candidate for South Norfolk, died at the Cranked Billet Inn, near Basingstoke, on Tuesday, August 29, from injuries received in a motor accident on August 10.

Mr. Winch was travelling to Yateley Grange, in Hampshire, and on reaching the curve of the road at which the Cranked Billet Inn stands, he mistook the road and drove straight into the wall of the inn.

His skull was fractured and he lay unconscious for over eighteen days.

It is stated that the accident, which happened at night, was entirely due to the fact that Mr. Winch would not use acetylene lamps, because he said they frightened horses. The moon was shining on the wall of the inn and looked like a white road. The road itself was in shadow.

The photos show the Cranked Billet Inn, the car which the car struck, and the car after the smash.

Need we make comment?

WRITE FOR BOOKLET OR ASK YOUR SUPPLY MAN

BADGER BRASS MFG. CO.

KENOSHA, WISCONSIN

NEW YORK OFFICE 11 WARREN STREET

1906 Stoddard-Dayton

MODELS C AND D

30-35 h. p. Touring Car 15-18 h. p. Runabout

To the Trade—This FORETASTE of the 1906 Model D is issued at this time to advise our friends of the natural developments which come from experience in all parts of this great country of ours, which experience is digested with an eye single to the pleasure and comfort of purchasers of the Stoddard-Dayton.

Dayton, Ohio, U. S. A., October 1, '05. THE DAYTON MOTOR CAR CO.

MOTOR—The Engine is 4-cylinder vertical, water cooled, 4½ inch bore, 5 inch stroke. Cylinders cast separately and heads integral. Valves mechanically operated. Cam shaft and pump gears entirely enclosed and running in oil. Bearings between each crank. Lower half of crank case removable, leaving bearings intact. Inspection covers in upper half of crank case. Positive and splash lubrication.

TRANSMISSION—Sliding gear. Gears running in oil. Case, oil and dust proof. Three speeds and reverse. Timken roller bearings throughout. Direct drive on high gear. Double universal joint between end of propeller shaft and transmission, and also between transmission and clutch, eliminating all end thrust and strain on the bearings. Cone clutch, large diameter, lined with leather.

LUBRICATION—Mechanical-pressure feed oiler. Each feed can individually be worked by hand in case of emergency. Bearings for wheels, rear axle and propeller shaft packed in grease sufficient for 2,000 miles.

IGNITION—Jump spark, storage batteries, coil on dash. Timer on vertical shaft, hardened steel contacts. Concealed wiring.

CONTROL—Spark and throttle levers situated just underneath the steering wheel, operated by the fingers without removing the hand from the wheel.

Two foot pedals, the left one operating the clutch only, the right operating the transmission brake and clutch.

Change gear lever on the same shaft as emergency brake lever and is of the selected or H slot type, thereby enabling the operator to change gear without necessitating any intermediate steps.

BRAKES—Three, internal expanding, large diameter and wide face, encased and protected from dust and mud.

Brakes on the rear wheels rigidly connected with the hubs, and are of the same type and size as transmission brake. They are interconnected with the clutch.

Transmission brake shoe is interchangeable with those on the rear wheels.

FRAME—Pressed steel made from high carbon, hot rolled stock. Motor and transmission carried on dropped subframe reinforced at sides. Drop forged spring hangers.

FRONT AXLE—Front axle, I beam section with drop forged yokes, integral with the axle and free from welds.

Drop forged steering spindle and arms. Knuckles have hardened steel bushings and bolt.

REAR AXLE—Clutch drive type. Spur gear differential with case hardened steel gears. Differential casing has extended hubs running in Timken roller bearings. Wheels have Timken roller bearings and run on steel sleeves extending from bevel gear casing. Driving shaft has no weight to support and simply transmits power to wheels. Differential removable without taking off wheels. Propeller shaft entirely encased in heavy drawn steel tubing. Casing supported at forward end by ball and socket sliding sleeve, hung from cross member on frame, and therefore acting also as torsion lever.

All bearings and bevel gears adjustable.

SPRINGS—40 inch front, 50 inch rear. Single Elliptic, 2 inches wide, made from the best crucible analysis steel.

WHEELS—Artillery 32 x 4, Timken Roller Bearings. 12 spoke front, 14 spoke rear. Spokes made from first-class second growth hickory.

TIRES—Any standard American make.

BODY—New design, 4 inches wider in tonneau seat, retaining artistic lines of 1905 model. Side entrance tonneau; divided front seat; seating capacity, five people.

FINISH—Trimming and painting done in our own shops, under our own supervision. Standard color, the well known Stoddard-Dayton pearl gray, but will paint and trim to customer's own specifications if desired.

EQUIPMENT—Horn, two oil side lamps. Complete set of tools, tire repair outfit and pump.

MISCELLANEOUS INFORMATION—Wheel base, 102 inches; thread, 56 inches. Gasoline capacity, 15 gallons. Each car will be equipped with metal dust pan or apron, protecting all parts under car from mud and water.

PRICE—$2,250.00, f. o. b. Dayton, Ohio, U. S. A.

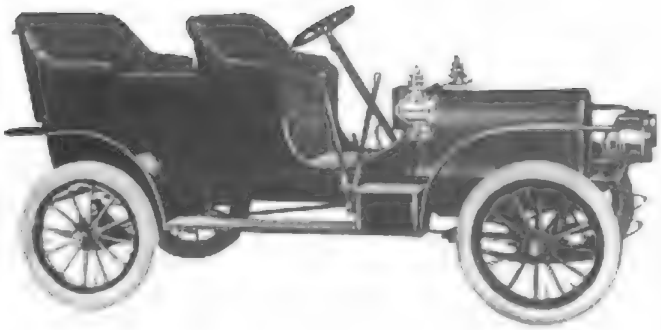
RUNABOUT—Model C. Four cylinder, water cooled, 15-18 H. P., sliding gear transmission, three speeds forward and reverse, shaft driven rear axle, 80 inch wheel base, wheels, 30 inch. Price, $1,250.00.

Our regular 1906 Catalogue, giving full description and illustrating the same, will appear later, when it can be executed in artistic form.

A record of your name will secure a copy.

Dayton Motor Car Co., Dayton, Ohio

Digitized by Google



Type G 1906

4-Cylinder Touring Car

Four-cylinders. Air-cooled. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force feed oiler on the dash. 4 or 5 passengers. Side doors. 88-inch wheel base. 12 "*Franklin* horse-power." 1200 pounds. 35 miles per hour. Full head and tail light equipment. $1,300.

Details of construction on pages 46, 47, 48 and 49.

To the great majority of motorists this is the most interesting and attr tive car in the whole motoring field for 1906.

The ideal light family touring-car.

Light in weight, small in bulk and operating cost; but big in strength, capacity and performance.

Its 12 "*Franklin* horse-power" does all that any 20 horse-power car, except a *Franklin*, will do; does more than most of them; does what some of the highest-powered highest-priced cars will not do.

It carries 4 or 5 passengers actually 35 miles an hour.

It takes hills on the high gear that would balk many cars of much higher rating.

The rear seat is more than wide enough for grown people. Add a boy or girl and it is just right.

It has the lines and looks of a big car. Being s driven its four cylinders are placed "fore-and-aft" unc long rounded hood, the same as in Type D.

You can buy a bulkier and heavier car or one of h nominal rating for less money. But you cannot buy an car that will do what this does for anywhere near the mc

It's the car of the year.

It will be the ideal light car of years to come.

FRANKLI

Four remarkable

Type G: The new Light Ideal Touring-car Shown above.

Type E: Gentleman's Roadster. The best-built, ablest runabout in the world. Shown opposite.

Type D: The finest high-power, 4-cylinder, American road touring-car. Shown on page 48.

Type H: The new 6-cylinder, top-notch flyer. Shown on page 49.

THE MOTOR: Under hood. In **TYPES E, G and D,** 4 vertical cylinders. In **TYPE H,** 6 vertical cylinders. Bore and stroke: In **TYPES E and G** 3¼x3¼. In **TYPES D and H** 4x4.

Hood can be instantly removed, leaving motor entirely exposed.

Cylinders are cast separately and so designed that the metal is evenly distributed, thus insuring a casting free from strains and one that will remain permanently round. Cylinders are bored, seasoned and then ground, thus insuring a straight and round cylinder.

Pistons and cylinders are cast to a special analysis, insuring a very tough and close-grained iron; thereby doing away with loss of compression due to porous iron. Three eccentric rings ground round after cutting are fitted to each piston.

Crank shafts are made from the same analysis stock as in the past, as we have never had a broken shaft. Every bearing on the shaft is ground to size.

Wrist pins are hardened and ground to size.

Babbitt bearings are used throughout the crank shaft.

All gears are enclosed and hardened.

Governor parts are all enclosed.

No parts of the motor require hand lubrication. By removing four screws the crank shaft, connecting rods and main bearings are exposed to view.

All valves are exposed, are mechanically operated, and are easily removable for inspection.

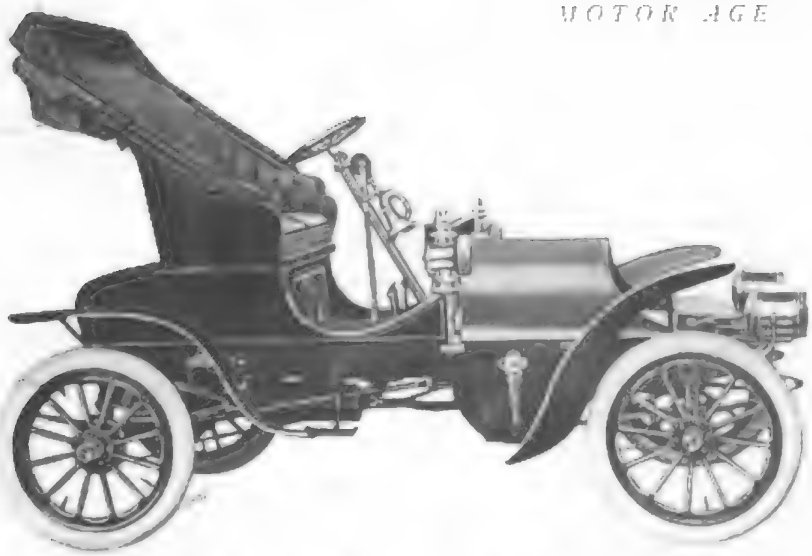
AUXILIARY EXHAUST: A port with valve at bottom of the stroke lets the hot high-pressure gases out before the main e valve opens; thus reducing back pres maintaining the combustion chambe temperature of maximum efficiency.

It increases the power of the en keeps the exhaust valves from gettin and pitted. It keeps carbon deposi the combustion chamber almost co It positively keeps spark plugs from It allows the use of graphite lubric the engine.

COOLING: Direct air-cooling. I **E** it is natural; with no fan. In TY suction-fan wheel is used in rear o In **TYPES D** and **H** there is also the front. It is gear driven with no chains to run off or stretch.

IGNITION: Jump spark, with dry arranged in two sets which may be

Digitized by Google



Type E 1906

4-Cylinder Runabout or Gentleman's Roadster

Two passengers only. No tonneau can be attached. 12 "*Franklin* horse-power," 4-cylinder, air-cooled engine. Wheel-base 81½ inches, 7½ more than last year. Makes the car roomier, distinctly more graceful; and easier riding. Force-feed oiler on the dash. Change lever placed inside the car and forward. More convenient—especially when top is on; and handsomer. 1100 pounds. Combination ironing for canopy, cape or victoria top and glass front—a decided improvement. 40 miles an hour. Full head and tail light equipment. $1,400.

Details of construction on pages 46, 47, 48 and 49.

The ablest, speediest, most luxuriously-built runabout ever built. This year it is handsomer, easier, more remarkable than ever.

As a business runabout; a superintendent's car: or for a doctor or other professional man; for a suburbanite; for 2-passenger touring; or as a speedy roadster for the owner of a big touring-car, there is nothing to compare with it.

Not only its astonishing speed and hill-climbing ability; but its great strength, extreme mechanical refinement, responsiveness and elegant simplicity combine to make it virtually an independent type and the only example of its type.

The material and workmanship employed equal that of the best-made high-priced touring car.

It would be a mistake to class this car with the ordinary runabouts. Buying it by the pound, its price looks high; but judged by ability, amount of service rendered, and satisfaction given, there is no better vulue. In the long run it is the most economical of runabouts.

We will send on request a book more completely describing this car and showing its appearance with glass front and various tops.

NEWS for 1906

continued on next page

every=day=in=the=year cars

Improved oiler; carburetor; clutch; brakes and bearings. More convenient levers. Better protection of parts.

Franklin Air-cooling. 4 and 6 cylinders.
Lightness. Strength. Springs.

dependently or together. Cells are carried on running board in mud and water-proof box. Spark coil is on dash. All wiring is enclosed and protected from dirt, oil and moisture. Timer contact is made by roller, thus doing away with all wear and insuring a long life.

CONTROL: Spark control is on wheel column. Throttle control is on steering wheel. The driver has complete control without moving.

LUBRICATION: A sight, force feed mechanical oiler on dash in sight of operator furnishes oil for all parts of the motor. Transmission gears are enclosed in oil-tight case and run in bath of oil. Rear axle differential and bevel gears are enclosed in oil-tight housing and run in oil bath. Universal joints are protected from dirt and supplied with oil and grease cups easily accessible.

The oil pump is run by a wire belt which will not slip from spilled oil, and will not stretch.

CARBURETOR: Automatic float feed. Gasoline enters from lower side of carburetor and is strained through wire gauge before entering float chamber. Dirt and water are collected in a trap, which can be entirely removed or easily cleaned, without disturbing any other part of carburetor.

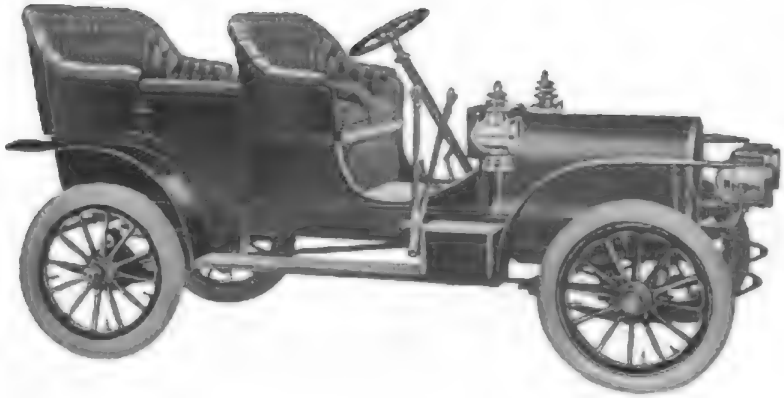
A by-pass operated by the throttle supplies auxiliary air in proper proportions. This by-pass being mechanically operated, does away with springs, separate air control and a multiplicity of other parts. All connections are made with ground joint unions.

We manufacture our own carburetor. Many carburetors purchased on the market and which give satisfaction on ordinary motors are not efficient enough for *Franklin* motors.

CLUTCH: A disc clutch perfected in all details allows the car to be started slowly, easily and without jar. A slight oil film carried between the discs makes the changes from one speed to another unnoticeable. There is no slipping after engaging.

DRIVE SHAFT: A bar of nickel steel of square section and of ample strength. Though designed to stand rough usage this shaft is the weakest member in the entire power transmitting line—the part most likely to break or bend. The advantage of this is that all gears and expensive parts are insured against injury. The shaft is more easily replaced than other parts. As there is absolutely no machine work on it except squaring the ends, in case of accident a temporary shaft is obtainable anywhere.

Digitized by Google



Type D 1906

4-Cylinder Touring Car

Four cylinders. Air-cooled. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. 5 passengers. Side doors. 100 inch wheel base. "Franklin horse-power." Full head and tail light equipment. 180 pounds. 40 miles per hour. $2,800.

Details of construction on pages 46, 47, 48 and 49.

The finest and speediest of all 20 horse-power Touring Cars.

Money will not buy more luxury and comfort, or better touring mileage in a car of 4 cylinders or less.

You cannot safely get a better average mileage out of the usual heavy 40-horse-power car than out of this 20 "Franklin horse-power" D.

Its patterns are like the G car but it has larger ders; longer wheel-base, and 8 more "*Franklin* power." It is roomier and even more luxurio appointments. For combined strength, speed, pass capacity, lightness and easy-riding it has no equal, Type H.

FRANKLIN NEWS

co
tin

Clutch and brake levers are put forward out of the way so that the driver can get in and out easily. On the **E** car they are placed inside.

With the **E** transmission the gears are always in mesh. There can be no stripping of gears. When the high clutch is on no gears are used at all, the drive being direct from the engine shaft to the rear axle. The chain-drive has proven so completely successful on the **E** car, that even the opponents of chain-driven cars agree that here it is "all right."

BRAKE CONTROL: Three hand brakes, one on each rear wheel and one on the transmission brake drum. For 1906 these have all been increased in diameter and face until they are now more than amply safe. All brakes are double-acting, and each brake alone is sufficient to hold car under ordinary circumstances.

AXLES: Front axle is made from nickel steel tube. This insures lightness, rigidity and a superabundance of strength. Yokes and knuckles are of nickel steel. Bearings are of Timken make, especially designed for *Franklin* cars.

Rear axle on **TYPES G, D and H,** divided driving axle running in tubular axle on ball-bearings. On **TYPE E,** divided driving axle running in tubular axle on Hyatt roller bearings.

Rear axle is of nickel steel, especially treated, and of from 58 to 64 tons tensile strength per square inch. Differential gears are in an oil-tight case. Differential and bevel drive gears are made from nickel steel forgings.

NICKEL STEEL: This material is specially adapted for automobile construction and will be used the coming season throughout *Franklin* cars. Our transmission gears and shafts, drive-shafts, differential in rear axle, bevel driving-pinions, clutch-shaft, brake rods, rear and front axles, knuckles and yokes are made from this material. It was only with great difficulty that we could secure this stock in forgings. Drop forge manufacturers dislike to handle this material, as it is very tough, slow to forge and extremely hard on dies. It can only be machined by using powerful machines and high-speed steel tools. As the stock is hard to get, we were obliged to order early in the spring and in the quantity wanted for a season's supply. This is new in our hands. Customers are assured of the best stock obtainable. Manufacturers who have ordered late cannot entertain much hope of getting this stock in time for early 1906 deliveries. We specially desired this stock, as it possesses maximum strength and minimum weight. It is only a little way removed from armor-plate.

STEERING GEAR: Irreversible wheel.

SPRINGS: Four full elliptic springs. On Type **E** 30-inch, **D** and **H** 40-inch. These springs take up all road shocks—horizontal, vertical and from every direction—more completely than can be done by any other means, thus saving passengers and car.

SILLS: Our sills are of specially selected second growth ash seasoned one year. Our buyer personally inspects every stick of timber which is purchased for *Franklin* sills.

Wood sills are admitted to be a distinctly *Franklin* feature. When mounted on four full elliptic springs these sills give a combination for easy riding which is equaled by no other cars in the world.

WHEELS: Wood—artillery type. and **G** 28-inch; **D,** 32-inch; **H,** 34-inc

TIRES: On Type **E,** 28x3; **G,** 760x9 760x90 rear; **D,** 32x3½; **H,** 34x4.

TANK CAPACITY: In **TYPES E** 7 gallons gasoline; 6 pints lubrica enough for 125 miles. In **TYPE D,** 1 gasoline; 6 pints lubricating oil, en 150 miles. TYPE H, 16 gallons, en 20 per cent.

TREAD: Standard.

BODY: In **TYPES G, D and H,** al with two side doors, divided front se gle seat for three behind. In **TYPE** inum, built on steel angles; divid Special soft cushions.

Aluminum is both stronger an than wood. Will not crack nor spli holds finish better.

Side-doors open towards front; sion hinges, swinging clear open a wide entrance.

HOOD: Aluminum, and instantly able.

FRONT MUD-GUARDS: Impro tern, giving complete protection fro

MUFFLER: Small but entirely e

BOOT: A strong, light steel boo the motor from dirt and water. designed that it will not accumula gasoline, thus protecting the car fr by fire. A very important considera

EQUIPMENT: Two oil side lam lamp, 2 headlights, horn, complete t ment. Best quality lamp, and on H acetylene mirror-lens headlights

Digitized by Google

Type H 1906

6-Cylinder Touring Car.

Six cylinders. Air-cooled. Shaft drive. 3-speed sliding gear transmission. New and perfect disc clutch. Wheel base 114 inches. 30 "Franklin horse-power." 2,400 pounds. 50 miles per hour. Full head and tail light equipment. $4,000. Complete specifications on pages 46, 47, 48 and 49.

This car combines great power with light weight to a degree never before attained. It is the *Franklin* idea pushed up to the highest notch.

For speed it is the "Empire State Express" or "20th Century Limited" of automobiling.

The six cylinders have the same advantage for a very high-power car that four cylinders have over any smaller number in a car of moderate power.

The engine force is divided into six impulses; which balance the motor rotation with extreme evenness and produce the utmost smoothness of running and flexibility of operation.

They also permit tremendous power and speed without a corresponding increase of weight or strain on the car.

Type H is the *Franklin* of all the *Franklins*.

Service. Economy. Value.

All *Franklin* Cars can be used right through the winter. No weather can freeze them. With air-cooling there's nothing to freeze.

They call for no plumbing work at any season; no expert "chauffeuring;" no warm barn.

They give continuous all-the-year-round service; and when topped are perfectly comfortable in any weather.

They are the strongest cars of their weight ever built; and the lightest cars of their power.

They cost 50 per cent more per pound to build than any other cars.

Refined engineering and simple design make them efficient far beyond proportion to their ratings; and this efficiency is all available; on all roads, all the time.

Their great strength, responsiveness to control, lightness and perfect spring-suspension make them safe and comfortable when driven at speed on roads which would be neither safe nor comfortable at such speed for any other cars.

No matter how fast a heavy car can go on level boulevards, it cannot safely—much less comfortably—be driven at speed over average American roads. Neither the car nor the passengers will stand it.

The high-power *Franklins* cool as completely and perfectly as the runabout, in hot weather or at a hot pace. This is a demonstrated fact, beyond shadow of doubt. The proofs fill a book; if you want it we'll send you the book.

All *Franklin* cars are remarkably quiet.

Franklin touring-cars do the same work as the heaviest highest-priced cars; but are far easier to ride in, to handle and to care for; far more enjoyable, safer and vastly more economical.

Heavy cars are costly to buy, to operate and to maintain. They are frightfully expensive in their wear-and-tear on tires.

Franklins save fuel, oil, repairs and above all, tires.

Franklins give you more of all the things you want and also save your money.

They are sold under a strong and definite guarantee.

The *Franklins* shown here are not only up-to-the-minute cars of the season; but their far advanced design and detail perfection will make them favorite and standard cars of many seasons. Not one-year cars; but cars "for keeps."

"The Motor Car of the Future"

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Association Licensed Automobile Manufacturers

Digitized by Google

GO PREPARED

FOR ALL KINDS OF WEATHER

TOPS

There are thousands of automobilists in this country who do not realize that they can buy a top of the **best grade and durability, complete** with side and rear curtains, for

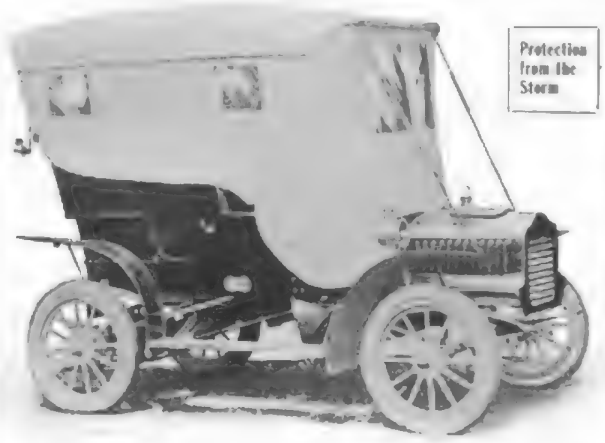
$75

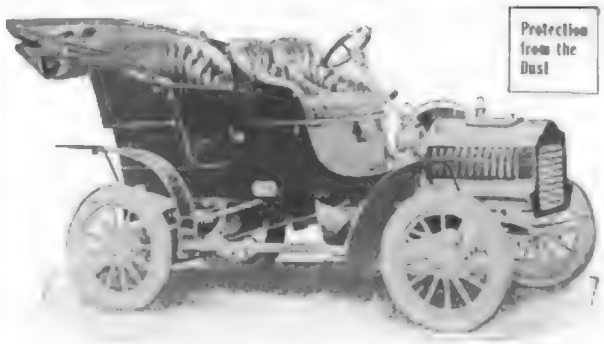
crated for shipment, F. O. B. Detroit, and ready in every particular to attach.

Our line includes every possible style:
4-Bow Extension,
3-Bow Cape,
Or Canopy.

Front strap or side brackets as preferred.

Steel bow sockets enameled, or leather covered, as specified.





TOPS

We **guarantee** our tops in **every detail** to be the equal of any $125 top ever built.

The three cuts illustrate the same top—

The first with rain curtains in position.

The second with curtains detached and top folded back as a dust shield.

The third with top in position as a sun shade.

TO THE DEALER:
A great inducement if you act at once.

Send for complimentary copy of
"Man and His Motor"
—the most valuable motor book ever published.

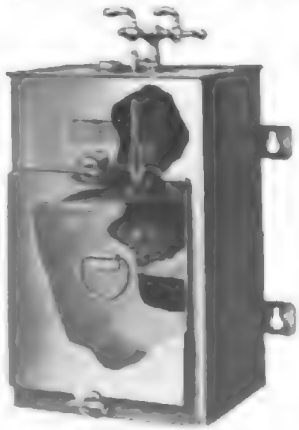
AUTO EQUIPMENT CO.
260 Jefferson Avenue
DETROIT, MICH.

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

THE POWER BEHIND THE THRONE.

—in an Acetylene Gas Lamp—is the Generator. If you have a good Generator you are certain of having a good light.



PATENT APPLIED FOR.

Atwood Generators surpass anything ever heretofore placed upon the market. They are simple and effectual.

EVERY OBSTACLE HAS BEEN OVERCOME

ATWOOD GENERATORS

are the result of our 30 years' experience as Lamp makers. Manufacturers who place their orders for 1000 Lamps before seeing the extremely artistic Atwood product and that Perfect Generator will regret their haste. Sure. Ours is an attractive Lamp proposition.

WRITE US

ATWOOD MFG. CO.

AMESBURY, MASS.

Digitized by Google

Motor Age Circulation

How Many of Our Esteemed Contemporaries Can Show a Letter as Strong as This?

FLINT, MICH., August 22, 1905.

MOTOR AGE, Chicago, Ill.

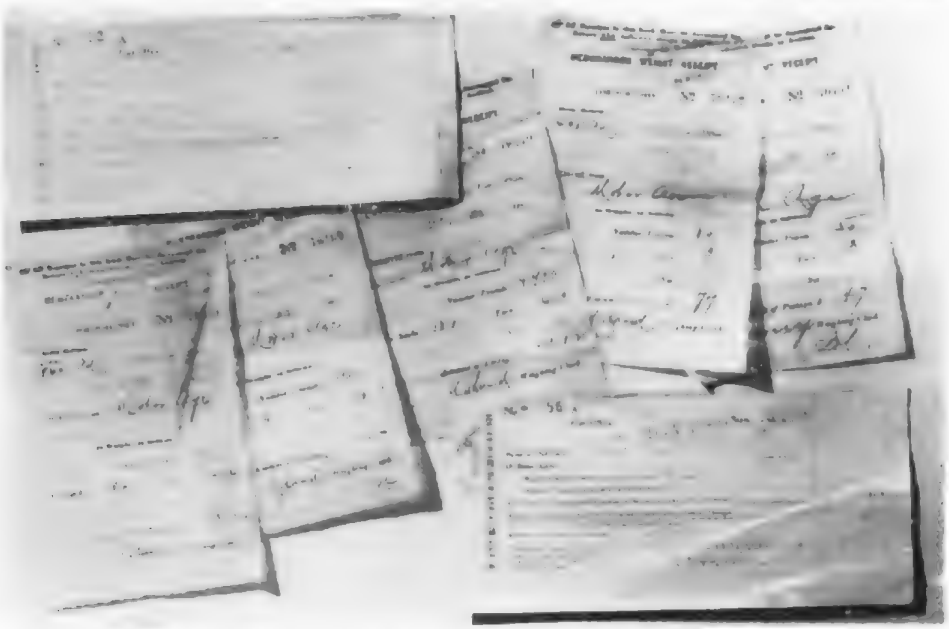
GENTLEMEN:—We are in receipt of your favor of the 17th and also the current week's issue of the MOTOR AGE.

We wish to compliment you upon the write-up by which you have favored us in the columns of your magazine.

Referring to advertising space, will say that we are not quite ready to place a contract for this work, but hope to be able to do so in a few days, and will no doubt favor you with same, as we feel that the results obtained from advertising in your medium so far have been very satisfactory.

Again thanking you for the favor extended, we remain,

Yours truly,
AUTO BRASS & ALUMINUM CO.,
Per O. M. Nacker, Sales Manager.



The above cut represents Post Office Receipts for 8,577 pounds net, of issue of September 28, 1905.
Each paper, including wrapper, weighed an average of 12 ounces.

8,577 pounds divided by 12 ounces equals	11,436	papers
We also sold, **non-returnable**, to Western News Co. and news stands direct	657	"
Mailed under stamps to foreign addresses	89	"
Retained for office sales and distribution	350	"
Total for week of September 28	12,532	"

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	"
August 31, page 38, statement for August 17	12,176	"
September 7, page 29, statement for August 24	12,271	"
September 14, page 42, statement for August 31	12,518	"
	62,393	"

Average weekly edition for August, 12,468

September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	"
October 5, page 46, statement for September 21	12,283	"
Including above for September 28	12,532	"
Total for 4 issues in September	50,141	"

Average September issues, 12,535.

MOTOR AGE, *N. H. VanSicklen*

Manager.

Digitized by Google

This is what the current in a "SOOT-PROOF" PLUG must overcome in order to short circuit

ONE FULL INCH

BUT

of Soot offers more resistance than

$\frac{1}{32}$ of an inch of air

Therefore

The "SOOT-PROOF" PLUG

Does not and CANNOT SHORT CIRCUIT.

C. A. MEZGER, 803 West 80th St., New York

Digitized by Google

CHRISTMAS DIAMONDS ON CREDIT

THE LOFTIS SYSTEM AT CHRISTMAS TIME

is a great and timely convenience to thousands. It enables persons in all circumstances to make beautiful and appropriate **Christmas Gifts** with a very small initial cash outlay.

Everyone at Christmas time is anxious to give to their loved ones handsome Christmas Presents but it is not always convenient. The **Loftis System of Credit, means convenience.** Diamonds, Watches and Handsome Jewelry of all kinds for Christmas Presents on convenient terms.

You Are Welcome to Credit whether you are a moderate salaried employee or a wealthy employer. The Loftis System makes any honest person's credit good by adjusting terms to meet their earnings or income. Do not think that you must give a cheap, ordinary present because you can only spare a few dollars just now. With five or ten dollars for a first payment you can give Wife, Sweetheart or Mother a beautiful Diamond which will last forever, enhance in value and continually bring pleasant thoughts of the giver's generosity.

Love is the Real Santa Claus. It is love which brings the joys of a Christmas remembrance and a Diamond is the most appropriate of all gifts for a wife, sweetheart, sister or mother because it is the true token of love. **It is the gift of gifts. Write today for our Big Handsome Christmas Catalogue.**

Our Christmas Catalogue for this year will be the largest and most complete we have ever issued. **Write for a copy today** and glance through the wealth of Gems, Fine Watches and miscellaneous Jewelry illustrated on its many pages. Beautiful Xmas presents for all. Diamond Rings, Brooches and Pins for Wife, Sweetheart, Sister or Mother. Diamond Studs, Scarf Pins, Fine Watches, Charms, etc. for Husband, Father, Lover or Brother

At your leisure in the privacy of your home you can select the Diamond, Watch or piece of Jewelry you prefer. Write us and we will send you any article you may select subject to examination and approval. Examine it thoroughly. You are perfectly free to purchase or not just as you please. We pay all charges. We take all risks. We deliver goods anywhere in the United States.

We invite you to open an account with us, become acquainted with the famous **Loftis System.** Remember it means **convenience.** Every transaction is on honor, prompt and satisfactory, one fifth the price to be paid on delivery. You retain the article, sending balance in eight equal monthly amounts direct to us.

Cash Buyers are welcome too, and we have an equally attractive offer for them, as follows: Pay cash for any Diamond, and we will give you a written agreement to take it back at any time within one year, and give you spot cash for all you paid—less ten per cent. You might for instance, wear a fifty dollar Diamond for a year, then send it back to us and get forty-five dollars, making the cost of wearing the Diamond for the entire year, less than ten cents weekly. No other house makes this offer. **Write today for Christmas Catalogue.**

Diamonds As An Investment are unexcelled. They are increasing in value every year. The Chicago Journal says in an editorial that they will advance twenty per cent in value during the coming twelve months. What other present is there so acceptable and so profitable? **Write today for Christmas Catalogue.**

The Gold Medal Highest Award won by us at the World's Fair, St. Louis.

Do Your Christmas Shopping Now. Do it conveniently and leisurely in the privacy of your own home. Don't wait until the Christmas rush is on. **Now** is the time to secure the choice selections and have ample time to inspect the goods. **Write Today for our Big Handsome Christmas Catalogue.**

A Test of Merit. In competition with the entire world at the St. Louis World's Fair last year our goods, prices, terms and methods won the **Gold Medal**, the highest award given to any exhibitor. No stronger endorsement of the **Loftis System** could be given. **Write Today for our Big Handsome Christmas Catalogue.**

Our Reliability. We refer you to your local bank, and they will consult their commercial guides and Bradstreet and tell you that our responsibility and promptness are unquestioned. We give a signed guarantee as to the quality and value of every Diamond sold. Every Diamond we sell may be exchanged at full price at any time for a larger stone.

WRITE TODAY FOR OUR CHRISTMAS CATALOGUE.

LOFTIS BROS & CO. ESTD 1858 **DIAMOND CUTTERS Watchmakers, Jewelers** Dept. M660 92 to 98 State St. CHICAGO, ILLINOIS, U.S.A.

SAVE A DIAMOND

DIAMONDS WIN HEARTS

LÉON RUBAY

SOLE IMPORTER
for the U.S. and CANADA
of the Electric Ignition
Apparatus of

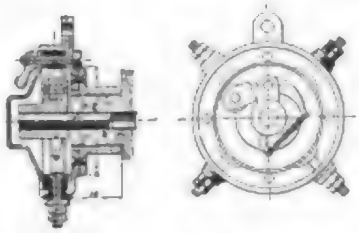
J. LACOSTE & CIE
of PARIS.

THE "LACOSTE"

HIGH-TENSION MAGNETO

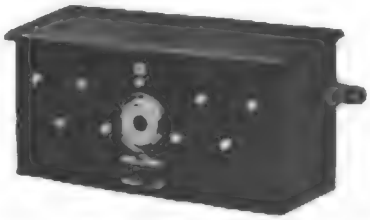
FOR JUMP SPARK IGNITION

The "Lacoste" High-Tension Magneto is the synonym for simplicity and perfection.



Wipe Contact Commutator

The proof of the efficiency of the
"LACOSTE"
Commutator lies in the fact that there are more of them in use than all other makes combined.



The "Lacoste" Coil

Is admitted to be the best induction coil made. The car which recently broke the 1,000-mile world's record was equipped with it. One thousand miles in 23 hours, 33 minutes, without a single adjustment, is certainly a remarkable performance.

WRITE FOR COMPLETE CATALOGUE

LEON RUBAY
also carries in stock
ZANARDINI LAMPS, HORNS
CONTINENTAL, MICHELIN AND SAMSON TIRES
140 West 38th Street NEW YORK CITY

Digitized by Google

ANNOUNCEMENT

The 1906 Rainier

30-35 H. P.

has arrived. Come and inspect, ye automobile experts—you who really appreciate beautiful workmanship and design, and you will admit that at last THE American automobile has come. Look over the following specifications, then call and try the car:

Engine—30-35 H.P., 4-cylinder, water-cooled.
Ignition—Sims-Bosch Magneto. Make and break spark.
Transmission—Sliding train, 3 forward and one reverse.
Rear Axle—Bevel gear drive, clutch driven hub, ball bearings.
Front Axle—I beam section, ball bearings.
Frame—Cold rolled pressed steel, aluminum under-bonnet covering entire engine and transmission.
Wheel Base—104 inches.
Wheels—Imperial whalebone, grade A; 2d growth hickory.
Tires—Continental, 34x4.
Valves—Mechanically operated, inlet and exhaust interchangeable.
Carbureter—Float feed, requiring no adjustment.
Body—Full aluminum, double side entrance.
Brakes—Two internal expansion, dust protected, operating on rear hubs through emergency lever holding either forward or backward. Foot brake operates on propeller shaft. Both brakes phosphor bronze against steel.
Equipment—Two headlights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000

The 22-28 h. p., which was the hit of the season in New York, will be continued as heretofore without any changes. 4-cylinder, 98-inch wheel base, La Coste coil, French battery, Continental tires, aluminum side door body.

Price, $3,500

Both models guaranteed free of repairs for one year. The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for October and November delivery.

THE RAINIER COMPANY

Broadway, cor. 50th Street NEW YORK

Boston Agents, Morrison-Tyler Motor Co.

Good agents wanted in unassigned territory.

Digitized by Google

A CADILLAC Dealer

Mr. C. C. Henry, of Summit, N. J., who has sold over 40 Single Cylinder Cadillacs since June 15, 1905, recently placed the following four-inch double column ad in the two largest local papers published in his locality:

WANTED
Second-Hand Model F
CADILLAC
AT ONCE STATE PRICE
G. G. HENRY
Cadillac Factory Agent
Summit New Jersey

The Jerseyman, Sept. 22, 1905

WANTED
Second-Hand Model F
CADILLAC
AT ONCE STATE PRICE
G. G. HENRY
Cadillac Factory Agent
Summit New Jersey

Madison Eagle, Sept. 22, 1905

WANTED—A Second-hand Model F Cadillac at once; state price. G. G. HENRY, Cadillac Factory Agent.

Herald, Summit, N. J.

Mr. Henry, writing under date of Oct. 3, 1905, says: "I did not get a single reply. No one in this country wants to dispose of their single cylinder Cadillacs."

The above ought to convince most any level-headed dealer that the CADILLAC Agency is a valuable asset.

CADILLAC AUTOMOBILE COMPANY :: Detroit, Mich.

The Columbus Electric

DOUBLE CHAIN DRIVE
SOLID REAR AXLE

75 MILES on ONE CHARGE

Weight 1,400 Pounds

Any Speed up to
20 Miles Per Hour

NOISELESS ODORLESS
CLEAN SIMPLE

An Ideal Pleasure Vehicle

FULL INFORMATION
SENT ON REQUEST

THE COLUMBUS BUGGY CO., *Columbus, Ohio*

Digitized by Google

DON'T EXPERIMENT

Just Sell

THE FORD

MR. AGENT:—Over 2,000 Automobile buyers decided during the past season not to experiment. They all bought "Fords." It is even more important for the retailer to *sell* a car of known merit than it is for the purchaser to *buy* one. The buyer only loses his *money*, but the Agent who sells a car not up to standard loses both *prestige* and *reputation*.

The success of the Ford Motor Co. is built on the success of the Ford Cars, and you know how great our success has been. Remember that people like to do business with successful firms, and a *car with a reputation is easier to sell than an unknown*.

You know the general rush to the Ford exhibit at the shows and how they all ask *"What has Ford this year?,"* plainly indicating that automobile men look to Henry Ford for new ideas and originality of design.

We have a surprise or two up our sleeve this year—particulars about October 15th—nothing before—except that there is certainly good business ahead for the Ford agent in 1906, and it might be well to write us and see if we can give you the proposition and the territory you require.

FORD MOTOR CO., Member American Motor Car Manufacturers' Association, Chicago **Detroit, Mich.**

Canadian Trade supplied by The Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

The Hartford Perfected Dunlop Tire

Paris, July 28, '05.

Dear Sirs:-

We have arrived in Paris coming over the Route Nationale from Aix les Bains via Lyons and Nevers. The roads were exceedingly trying, very hard and a lot of "pave" or cobblestones. I had two punctures. These were the only mishaps in 2136 miles and the tires have stood the hard work without showing any other signs of wear and tear. People here consider this a very good record as many of the best foreign tires blow out from the heat.

Yours truly,

Walter Hale

Postal No. 3.

Watch for others to follow.

The Hartford Rubber Works Company, Hartford, Conn.

Digitized by Google

Ancient Egyptian Arts
Ancient Egyptian Arts
Ancient Egyptian Arts

This AUTO TIRE has no BAD HABITS

It won't creep—it won't rim-cut—it won't come off the rim when run deflated no tire bolts required to hold it on the rim—and you can take it off and put it back in 60 seconds, using nothing but the hands. And it's a Tire, besides, that's as resilient as a "soft" tire, and will outwear most "hard" tires.

Sounds like a fish story, doesn't it?

But it's a *fact*, nevertheless.

Barney Oldfield didn't believe it, either, but he does now.

We *showed* him—he saw with his own eyes—and now he uses the Goodyear Detachable Auto Tire with the Universal Rim in all his races.

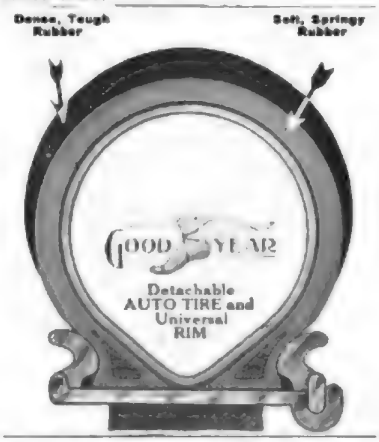
He used this tire at the Boston meet on Sept. 9th, where he made five miles in 4:55 and a mile in :55 1-5—breaking the track record.

You ought to hear Barney's chaffeur sound the praises of the Goodyear Detachable to all who will listen to him—hear him tell how reliable it is—how it saves him time, trouble and worry and makes his position easy. He says he never thought it possible (before using the Goodyear) to embody all the good points a tire *ought* to have in one single tire.

We wish you could come with us to the factory or to one of our branch stores. Then you could see in no time for yourself just why and how these things are true. You can "see through" it all instantly when the tire is before you.

We'll try, however, to explain just *one point*, here.

Why the Goodyear Detachable Auto Tire is *Durable* and *Resilient* at the same time.



Look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion is solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it.

Now right underneath this is the remainder of the outer casing (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The soft rubber portion is strengthened by having our *special fabric* vulcanized into it. This fabric is not the hard, inflexible sail cloth used in ordinary tires, but is woven like basket work, or an open-work stocking, and *gives* back and forth under pressure, and allows the elasticity of the rubber full play.

The dense rubber, the soft rubber and the special fabric together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

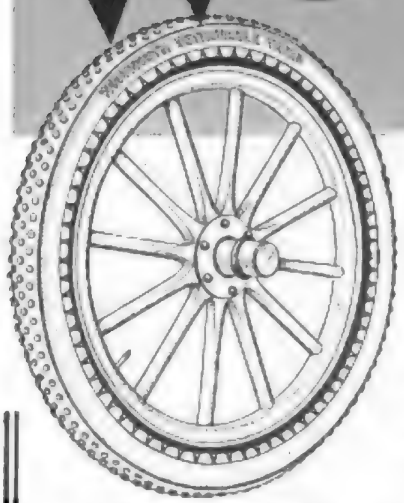
Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, AKron, Ohio.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 60 Frankfort St.; Philadelphia, 1421 Spring St.; Denver, 220 Sixteenth St., and Detroit, 247 Jefferson Ave.

WOODWORTH DETACHABLE TREAD

FOR AUTOMOBILE TIRES



Is the proper equipment for fall and winter use. It prevents slipping and skidding on muddy or icy streets. It also protects the tires from hard, frozen roads. The treads can be put on without removing the tires from the wheels. They are held rigidly on the tires by side-wires which pass through the loops and are tightened by small nuts. No special tools or equipment are required to apply them—with a wrench and a pair of pliers anyone of ordinary ability can do the work.

Can be used on any pneumatic tire, no matter how badly worn, if it is strong enough to stand the air pressure.

You will need something for use for this fall and winter. Why not get the best thing there is? They are not exorbitant in price.

WRITE FOR CIRCULAR, GIVING DESCRIPTION AND PRICES

LEATHER TIRE GOODS CO. NEWTON UPPER FALLS, MASSACHUSETTS

Business and the Oldsmobile

As a business man, when you decide to buy an automobile, you naturally turn to the trim, ever ready runabout, whose popularity among business men has won it the title of "An Office on Wheels."

It has been found that for daily use about town or even for runs into the country, the standard runabout, with its 7 h. p. single cylinder motor, is the most economical to operate and gives the most efficient service.

Traveling men have adopted it both for city service and, in a number of instances, for covering territory made up of small towns in well settled sections. For example, in Southern Michigan and Northern Ohio one man has used an Oldsmobile runabout for the past three seasons in visiting 225 towns, driving in so doing 8,000 miles each season.

Others have had equally satisfactory experience.

Send for Catalog 52, giving complete particulars of our line.

OLDS MOTOR WORKS

Member Association Licensed Automobile Manufacturers

Lansing, Mich., U.S.A.

FEWER

CONTINENTAL TIRES

are seen on cars surrounded by a curious crowd than any other make. Not because they are not good to look at, **but because they are always moving.**

THE CONTINENTAL CAOUTCHOUC CO.

EMIL GROSSMAN, Gen'l Mgr. 43 WARREN ST., NEW YORK

Factory, HANOVER, GERMANY

Digitized by Google

CORBIN CARS

For WINTER USE

Air cooling, which is highly desirable at all seasons, is especially advantageous when applied to cars for cold weather driving.

Corbin Model D Limousine
$3,000 to $3,500

The Corbin Motor Vehicle Corporation NEW BRITAIN, CONN.

NEW YORK, 4 West 38th St. BOSTON, 163 Columbus Ave. PHILADELPHIA, 629 North Broad St.

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in principal cities.

New York Agents: MAXWELL-BRISCOE, INC.

Digitized by Google

Classification Distinctive...WHY?

The Lightest, the Strongest, Most Durable, Most Efficient, Best Finished. Attractive in Rich Finish and Design, Simply Manipulated.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

THE BAKER ELECTRIC

SEND FOR OUR BK CATALOG

THE BAKER MOTOR VEHICLE CO. Cleveland, Ohio

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

24 h. p. Berg Touring Car

IMMEDIATE DELIVERY **MEMBERS A. L. A. M.**

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

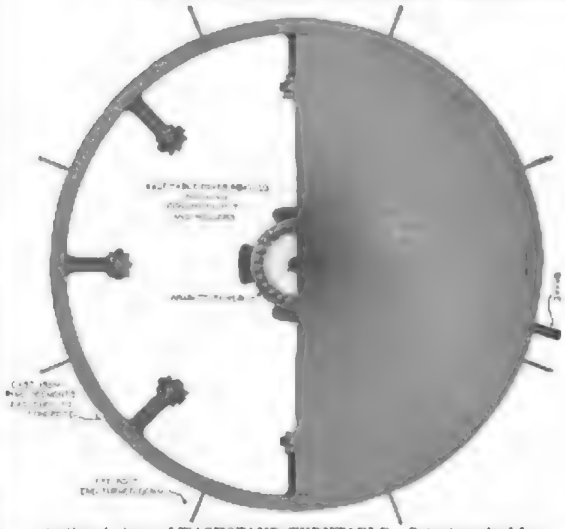
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

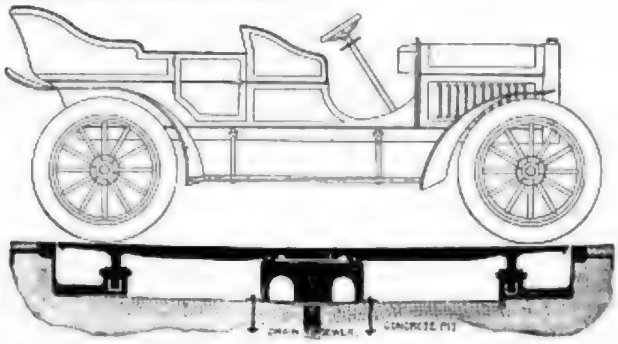
It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



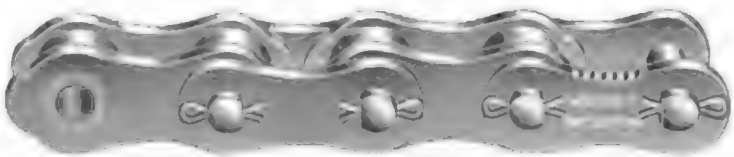


Sectional views of WASHSTAND-TURNTABLE. Patent applied for.

LINK-BELT Machinery Co.

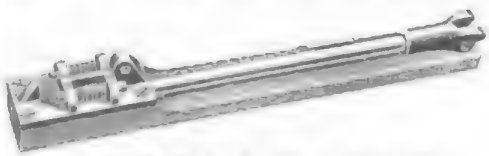
CHICAGO

Watch the efficient Double Chain Drive on 1906 Model Cars equipped with "Whitney" Chains. No noise. No trouble.



A boy can repair 100 "Whitney" Detachable Chains in less time than it would take an expert, with the assistance of a complete machine shop, to repair one damaged direct gear drive.

New "Whitney" Chain Repair Outfit ready for operation

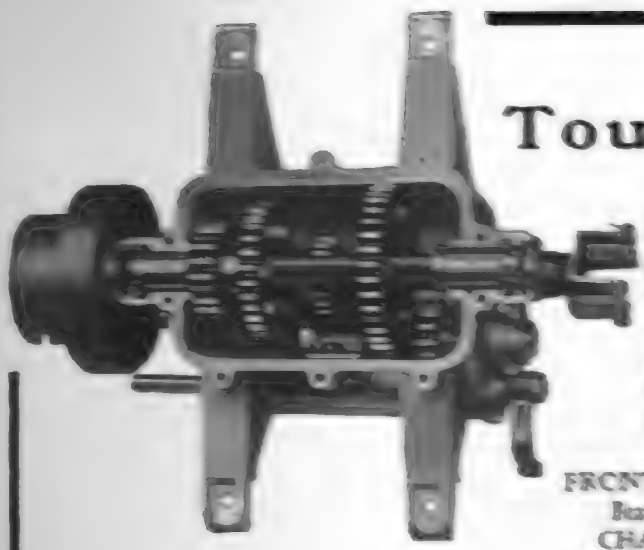


Repair Outfit with handle detached for tool box

The Whitney Mfg. Co.

HARTFORD, CONN.

Digitized by Google



Garford
Touring Car Parts

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR

STEERING GEAR

CLUTCH

DISTANCE ROD AND BRACKET

PROPELLER SHAFT

LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.
Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for Circular No. 12

THE GARFORD COMPANY, Elyria, Ohio

Sales Manager: HAYDEN EAMES, Cleveland, Ohio

PENNSYLVANIA CLINCHER

The value of a Tire is measured not by dollars, but by the Odometer.

The Tire which travels furthest without repairs is the most valuable to YOU.

The Tire which carries your Car softly over the road is the most valuable to your MOTOR.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

MICHELIN

The success of Michelin Tires is in a large measure due to the MICHELIN VALUE, a cut of which is shown herewith.

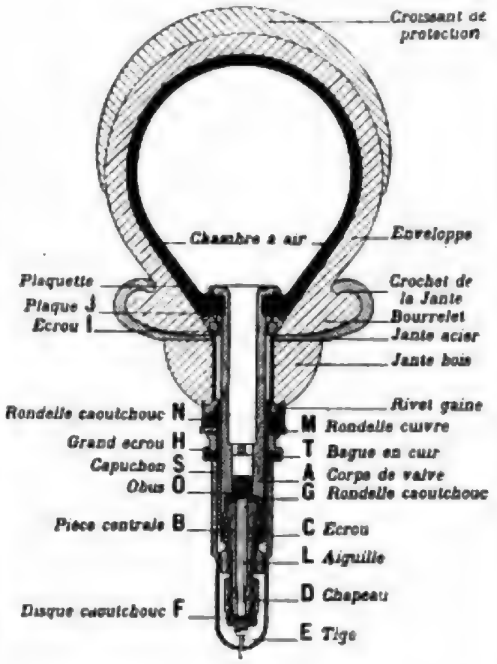
WRITE FOR PRICES.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 West 29th Street, New York

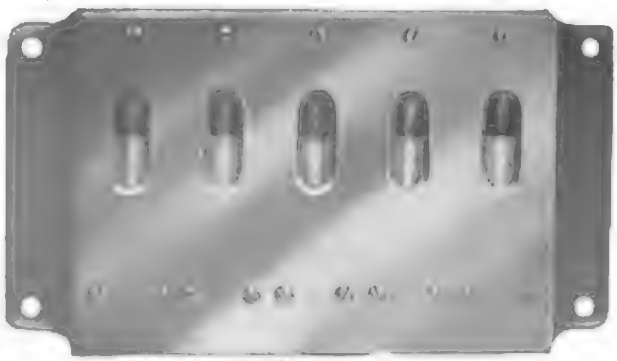
E. D. Winans, General Manager
Telephones: 760-761 Madison Sq.

Branches in All Large Cities in the United States



VALVELESS WONDER

A pump without valves, stuffing boxes or springs. When we eliminate these unnecessary va ves, stuffing boxes and springs we eliminate all of your trouble. Our pumps are all tested before being shipped to 1400 lbs. pressure. Are manufactured in any number of feeds.



Patent Applied for

We herewith illustrate a sight feed for the dash, which will not cloud and which allows the full pressure of the pump to be exerted through it. With this type of sight feed it enables you to keep the dash on your auto clean. You can place the pump down under the body of your machine, piping to the sight feed and from sight feed to the engine or bearing you wish to oil. These are manufactured in any number, indicating the feed of the oil by the movement of the metal discs inside of the glass.

WRITE FOR CATALOGUE

MASON-KIPP MFG CO MADISON WIS

Digitized by Google

Will you write us about the

1906 Agency for the Wayne?

The Wayne Agency for 1906 is a good thing. The Wayne Cars were extensively advertised last year in all the leading magazines and trade papers. For 1906 we have made arrangements for a campaign of cooperation with our local agents which will mean practical assistance in selling Wayne Cars. We realize that to get good agents it is necessary for the agent to have a proposition on which he can make money, and the Wayne agency proposition is one which it will pay you to investigate.

The Wayne line for 1906 is comprised of cars that have proved their ability to stand hard usage by three years' road service.

We have not changed the Wayne principle of construction because nobody has yet been able to show us anything better tho' our cars contain all new improvements and are strictly up-to-date (no old models built over).

WRITE US AND FIND OUT WHAT WE HAVE TO OFFER, BEFORE YOU FORGET

WAYNE AUTOMOBILE CO. - Detroit, Mich.

G&J TIRES

The Strongest Tires Made—because only the best of materials are used in their construction.

The Most Comfortable Tires—because most resilient.

The Most Economical Tires—because, being resilient, they increase the power of the engine, and reduce the consumption of fuel.

The Easiest Tires to Handle—because no tire clamps are used.

Write for Catalog and Tire Manual

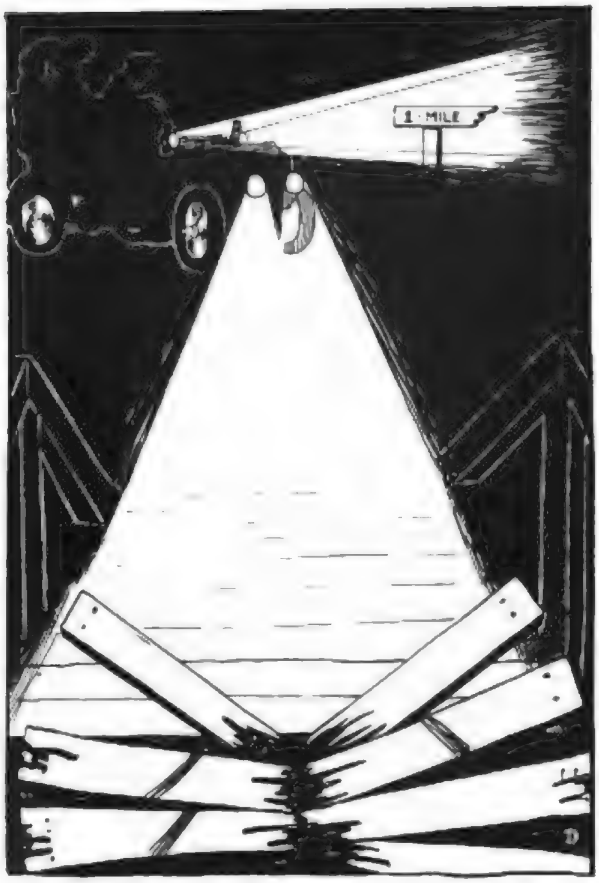
G&J TIRE CO.

Indianapolis

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google



THE IMPERIAL-LYON
Automatic Lamp Adjuster

"Lights a Turn Before You Make It"

Makes the Lamp Move With the Wheels.

Operated by the steering knuckle rod to which it is connected. Can be adjusted to automatically turn as fast or faster than the wheels.

Shows What's Around a Bend.

Just the thing for night riding. Prevents accidents. If there's danger around a corner, you see it before the body of your car turns.

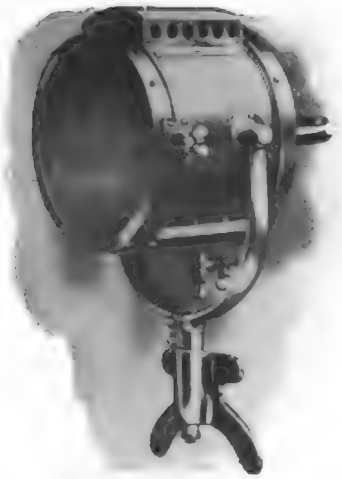
Works without friction. A handsome accessory. Made of solid brass.

If you ride by night, you need it.

Write for descriptive circular and price.

IMPERIAL BRASS MFG. CO.
249 S. Jefferson St. *CHICAGO*

Digitized by Google



SEARCHLIGHT SWINDLERS

The success of the Rushmore Lens Mirror Searchlight has been so complete that as a matter of course the lantern makers have been compelled to either try to imitate it or go out of business.

A number of them have conspired to keep us out of the automobile shows, have claimed that we do not make the celebrated Rushmore Lens Mirror and that they get their cheap flat lenses from the same place, and have resorted to every contemptible trick to deceive people into buying their trash.

Certain so-called jobbers have tried to push the sale of the imitation lights by issuing lists of what are insinuated to be our prices in comparison with their alleged cheap prices. The statement that we ask the prices quoted is a deliberate and malicious lie. The prices they offer are but a few cents lower than ours, while the fake lights they offer are by comparison not worth their weight as junk.

Some of the fake jobbers refuse to furnish the Rushmore light when requested to do so on the plea that we cannot make delivery. That statement is likewise a deliberate lie. They offer to refund your money if not as represented, but you had better hold on to your cash.

We do not ask any money in advance, but will send the Searchlight on ten days' free trial to anyone worthy of credit. The fake jobber can make but 25 per cent to 30 per cent on the Rushmore, while he clears 100 per cent to 200 per cent on the fake lights which he obtains on consignment. Do you wonder that he is willing to cheat you?

Our prices are the lowest for the quality and we ship from stock.

RUSHMORE DYNAMO WORKS, = Plainfield, N. J.

"Firestone"

It Takes Knowledge

Born of experience to manufacture a tire that will continue to stand the strain of use on commercial vehicles.

In many instances trouble with tires has made a commercial vehicle unprofitable until FIRESTONE Side Wire TIRES were adopted.

We have in our offices EVIDENCE of what FIRESTONE Tires have done, after many others have been tried and found deficient.

"Then Why Not Firestone?"

Firestone Tire & Rubber Co.

AKRON, OHIO

New York Chicago Boston Philadelphia St. Louis San Francisco Los Angeles

Digitized by Google

Glad to Get Back To GOODRICH TIRES

Mr. H. C. Baxter of Walpole, N. H., in a letter of September 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h. p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly,

H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE.

Regular Goodrich construction, but provided with the Bailey "WON'T SLIP" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company
Akron, Ohio

NEW YORK, 66-68 Reade St., and 1925 Broadway
BUFFALO, 781 Main St.
SAN FRANCISCO, 302 Mission St.
CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 80 E. Congress St.
LONDON, E. C., 7 Snow Hill.
CLEVELAND, 420 Superior St.
PHILADELPHIA, 909 Arch St.
DENVER, 1444 Curtis St.

THE LAMBERT

Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

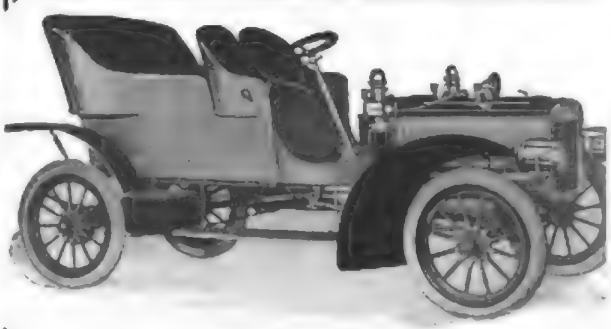
Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

MOLINE



18-20 HORSE POWER

Model "B"—$1,600

Four cylinder vertical motor that develops more than the rated H. P. Pulls through heavy roads and up hills in a way that surprises the owners of higher priced cars.

Has all the good features of most $2,000 machines and costs $1,000.

For the first time this season we can make immediate deliveries

We have only a few of them left and they will go quickly. Perhaps our proposition might interest you.

Model "D" Our stock of these entertaining 12 H. P. Touring Runabouts is decidedly limited. The price we are making is closing them out fast. If you want one, speak quick.

Moline Automobile Company
EAST MOLINE, ILLINOIS

Digitized by Google

POPE Waverley ELECTRIC AUTOMOBILES

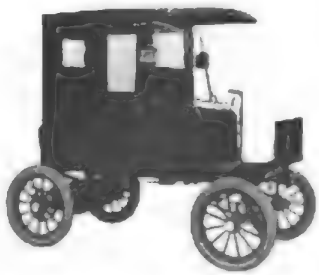
You See Them Everywhere

The cut below shows our Pope-Waverley, Model 30. It is by far the smartest station and general utility wagon yet produced. The front seat is finely upholstered; the interior of dark green broadcloth. Gearing noiseless, "herringbone" type, running in oil, and protected in dust-proof cases. Motor equipment consists of two 3 h. p. motors of improved design, each capable of an overload of an additional 3 h. p.

We make also

Surreys, Chelseas, Runabouts, Delivery Wagons

and other models



Station Wagon, Model 30, $2,250

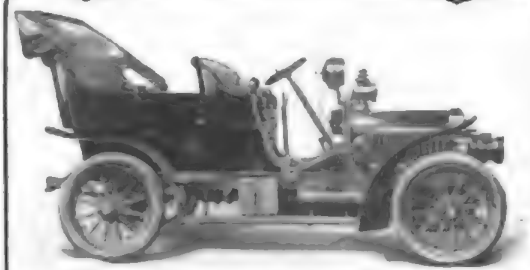
POPE MOTOR CAR CO.

INDIANAPOLIS, IND.

NEW YORK CITY	1733 Broadway
BOSTON, MASS.	223 Columbus Avenue
PROVIDENCE, R. I.	15 Snow Street
WASHINGTON, D. C.	819 14th Street
SAN FRANCISCO, CAL.	451 Mission Street

Cleveland

THE CAR OF SIMPLICITY



A Reliable Brake

is very important on an Automobile at all times: whether ascending or descending grades or running on the level.

¶ The Brakes on the CLEVELAND CAR—three—are positive in their action, and can be relied upon to perform their duty in any emergency. Any one of the three Brakes on the CLEVELAND when applied, disengages the clutch.

¶ The Emergency Brake is operated by a lever at the rights of the driver, and consists of one double-acting internal expanding bronze shoe, mounted in each of the rear hub drums.

¶ This Brake is so effective when applied, that it is possible to stop the car almost instantly.

¶ If you will send for our new Catalog, which contains full descriptive matter and illustrations, it will tell you more than the limits of an advertisement will permit.

IMMEDIATE DELIVERY 18 20 H. P. $2,800

BRING AN EXPERT WITH YOU

CLEVELAND MOTOR CAR CO.

386 Erie Street : : : : : Cleveland, Ohio

General Eastern Distributing Agent:

E. B. GALLAHER : 141 W. 55th Street, New York

Distributors:

BOSTON: Butler Motor Car Co., 998 Boylston St.
CHICAGO: The Bennett-Bird Co., 1404 1406 Michigan Ave.
MILWAUKEE: E. W. Arbogast Motor Co.
SOUTHERN CALIFORNIA: Worthington Garage, Los Angeles.

Digitized by Google

HILL PRECISION OILERS

THE WINTON MOTOR CARRIAGE CO.
MANUFACTURERS OF WINTON MOTOR CARS.
CLEVELAND, OHIO, U. S. A.

Sept. 14, 1905.

The Steel Ball Company,

840 Austin Avenue,

Chicago, Ill.

Gentlemen:

In reply to your favor of the 12th inst., would say that Mr. Alexander Winton has always recognized lubrication as one of the most important problems to be solved by automobile builders.

It is safe to assume that the Winton Motor Carriage Company has devoted more thought and experimenting to this feature than any other automobile manufacturing company in the country.

For more than a year the Hill Precision Oiler has been subjected by Mr. Winton to the most exhaustive tests, both in our experimental department and also in exceedingly severe and prolonged road work. The most satisfactory results have been obtained, and as a result, believing it to be the most perfectly developed lubricating device yet produced, Winton cars will be equipped during the coming season with the Hill Precision Oiler.

Yours very truly,

THE WINTON MOTOR CARRIAGE CO.

General Sales Manager.

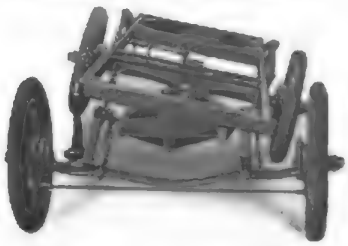
THE STEEL BALL COMPANY

No. 837 Austin Avenue

CHICAGO, U. S. A.

THE MARMON

"A Mechanical Masterpiece"



Twisting an Automobile

Get the details of this front view firmly in mind. Note that raising a rear wheel over a foot tilts the body frame, but does not tilt the lower frame. (A front wheel raised reverses the condition.) Note that one wheel rests on the obstacle encountered but that the other wheels rest solidly on the ground doing their full duty, adjusting themselves naturally to any position the road may demand.

All country roads twist an automobile in this way—in small or large degree. The flexibility of the Marmon is such that it endures this constant process of twisting *without straining* any part.

But substitute any other car in this test, bearing in mind that other cars have but one frame, attached to the four springs. Suppose you fastened the same three wheels to the ground (they would have to be well fastened) and applied enough force to raise the other wheel a foot. You would get somewhat the same effect by securely nailing three legs of your chair to the floor and trying to lift the remaining leg. Not quite so bad as that because the car has springs, but springs do not remedy faulty principle, and strain through every part is the certain result.

Then multiply this strain by the effect of speed over rough roads that present constantly varying conditions for twisting the mechanism.

That done, you will be partially aware of the importance of an exclusive *patented* Marmon feature.

Double Three-Point Suspension

Solid cast aluminum body on one frame, power plant on another frame, *each frame* suspended on three *pivotal* points. No matter what wheels are raised, no matter which frame is tilted, the power plant and rear axle are maintained in perfect alignment. Permits the use of a rigid shaft drive (*without universal joints*) delivering a greater percentage of power to the wheels than is had in any other car.

This elasticity, by eliminating the binding and twisting strains inevitable in the rigid suspension of all other cars, means simpler parts, fewer parts and less wear on all parts, tires included.

It also gives the Marmon, over all roads, an easy gentle sway, a luxury of motion that is unknown and unknowable in *any other car*.

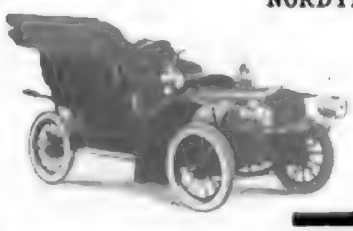
Stylish, strikingly handsome, and very quiet. Four cylinders; air-cooled. Has the only perfect force lubrication system, and is replete with features that appeal instantly and forcefully to all who seek a strictly high-grade car.

Write for Booklet No. 1 and become posted on the finest car of the times.

NORDYKE & MARMON CO.

(Established 1851)

Indianapolis, Ind.



Members American Motor Car Manufacturers' Association, Chicago.

ALL

Five of the

AMERICAN TEAM

in the

Vanderbilt Race

will use

Diamond

Wrapped Tread Tires

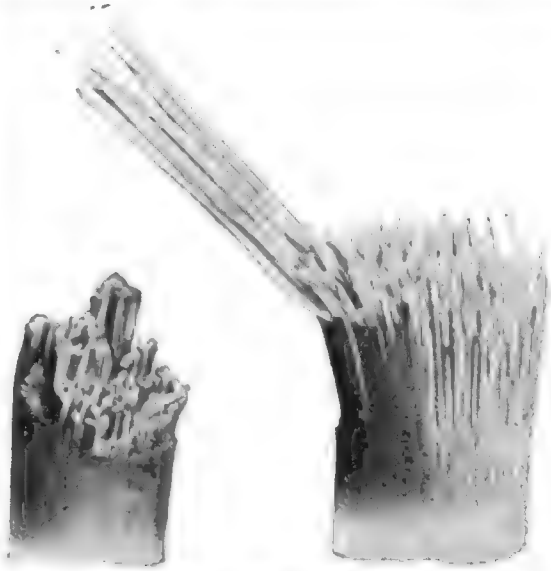
Loss of Time because of Tire Trouble counts as much in such a contest as Loss of Time because of Engine Trouble.

Manufacturers of cars do not select Tires on such occasions from sentimental motives.

They KNOW.

The Diamond Rubber Co.

Akron, Ohio



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 4

A bursted tire is robbed of its danger if the car is equipped with Imperial wheels.

There are two common methods of assembling wheels. One is to assemble the spokes in the two halves of the felloe, and then join the two halves. This method affords no guarantee of equilibrium of the central spoke arch, as only two of the spokes have a final radial pressure, while at least two have no radial pressure whatever. The other method is to press the spokes radially into the arch and assemble the felloe upon the spokes, afterward springing the spokes into the holes of the felloe. The shorter the spokes the greater the disturbance to the arch.

We employ neither method. In our factory spokes are assembled on the half rims without springing, but the final pressure on the spokes is radial in other directions, and the arch is undisturbed after assembly. We lubricate the arch that the spokes may "come home" evenly. The lubricant serves as a binder to protect the finished wheel and arch against those local strains which so often throw a wheel out of line.

The excellence of Imperial wheels is based upon the perfection and refinement of orthodox methods.

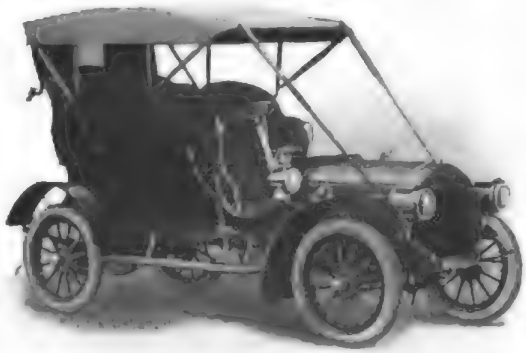
IMPERIAL WHEEL COMPANY

FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

The

HAYNES



Car that Won Honors

from America's best and most powerful special racing cars, in the VANDERBILT Trials, was simply a duplicate of our 1906 Touring Cars now going through the factory.

If THE HAYNES stock car defeats racers, what will it do to other stock cars?

We are booking orders and contracting agencies NOW for these cars.

Write us today.

The Haynes Automobile Co.

MEMBERS A. L. A. M.

New York KOKOMO, INDIANA Chicago

Third in Elimination Race September Twenty-third

If You Build A Racin' Car

to run 60, 70 or even 80 miles an hour, you won't need any extraordinary mechanical ability. You won't produce much that is of value if you succeed.

BUT

if you become the owner of a Royal Tourist, you have a car that can go fast enough to qualify in the Vanderbilt Cup Trials, and make the round of the course any number of times without the troubles the racing cars had, and one that will stay on the road, carry its passengers with comfort and safety, do its work quietly, and without strain on the motor or running gear.

REMEMBER

The Royal proved itself faster than the racers, and any owner will tell you about its reliability and comfort.

THE ROYAL MOTOR CAR CO. .:. Cleveland, Ohio

ROYAL

AGENTS

C. A. Duerr & Co., 58th and Broadway, New York G. J. Dunham, 182 Columbus Ave., Boston
The H. Duffee Automobile Co., 1443 Mich. Av., Chicago G.W. Caplin, 424 So. Fifth Street, Minneapolis
Automobile Supply Co. Lim., 24 Temperance St., Toronto Motor Shop, 317 N. Broad St., Philadelphia
Westminster Automobile Co., 4296 Olive St., St. Louis.

FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

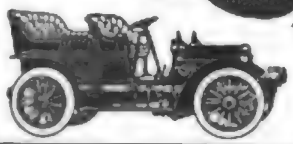
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co
107 West Monroe St. :: Chicago, Ill.

Digitized by Google

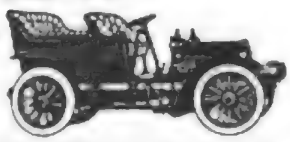
Locomobile



The *Locomobile* Company of America, Bridgeport, Conn.

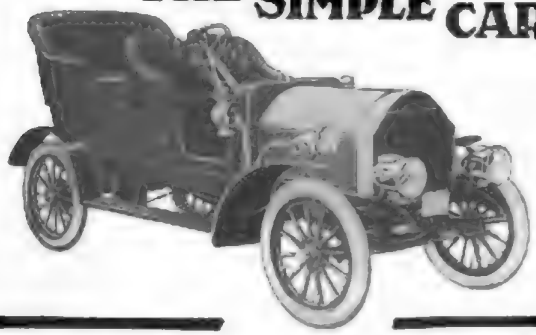
Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St
PHILADELPHIA, 240 N. Broad St.
BOSTON, 15 Berkeley St
CHICAGO, 1354 Michigan Ave



GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

National
Motor Cars

In two new models improved and better than ever will be ready very shortly.

We have a surprise to offer which will make EVERYBODY

"Watch for the Round Radiator"

National Motor Vehicle Co.
1006 East 22d Street
INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.

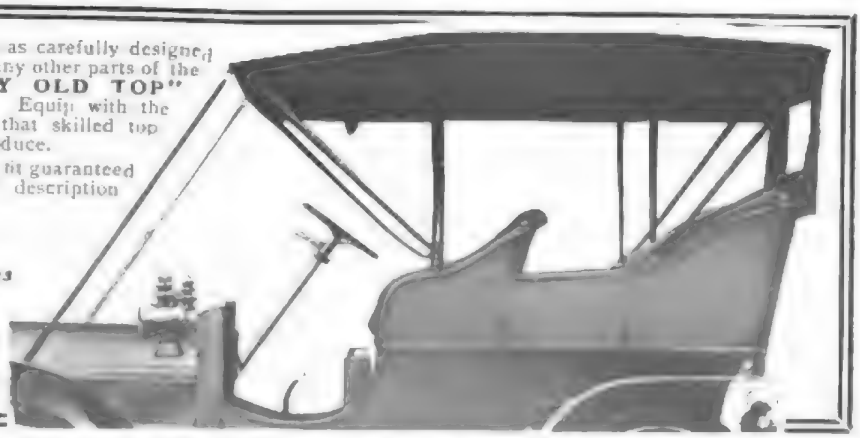
TOPS

should be just as carefully designed and fitted as any other parts of the car. "ANY OLD TOP" *won't do.* Equip with the LONDON TOP and secure the best that skilled top makers and the best of materials can produce.

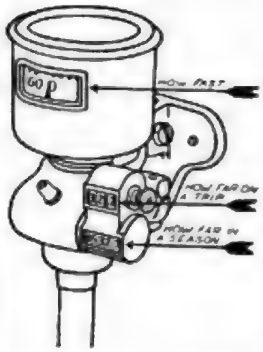
LONDON TOPS, made to fit any car, fit guaranteed Prices, samples of materials and full description promptly mailed on request.

Lamp Covers *Slip Covers*
Tire Covers *Engine Aprons*

London Auto Supply Co.
1229 Michigan Ave. Chicago



Digitized by Google



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 149 Federal St., Boston, Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

DANGER AHEAD!

Playing A Sure Thing

You always know that you have a sure, steady, full supply o cool, pure gas, instantly ready when you use the

Never freezes, never clogs. Never leaks and never wears out. No man ever returned to the uncertainties of the generator after using one.

Jan. 11, 1905.

Concentrated Acetylene Company,
Indianapolis, Ind.

Gentlemen:
The tank is a fine thing. For two months the "lighting up question" has been entirely forgotten, as I find that I always have light when needed. I have exhausted three tanks and exchanged them for refilled ones in a few minutes' time. I am running my car to-day when it is 4 below zero; last year my carbide generator would have frozen up; this year I am playing a sure thing and I can assure you that I appreciate the difference. Yours very truly,
(Signed) WM. C. THORNE,
Second Vice-President and General Manager, Montgomery Ward & Co., Chicago, Ill.

To be had of all dealers. Empty tank exchanged for full one by any dealer.

PREST-O-LITE COMPANY
INDIANAPOLIS
AGENTS IN ALL CITIES

Price Complete $35

Exclusive Licensees under patents of the Commercial Acetylene Co.

TANK RECHARGED AT SMALL EXPENSE BY ANY DEALER

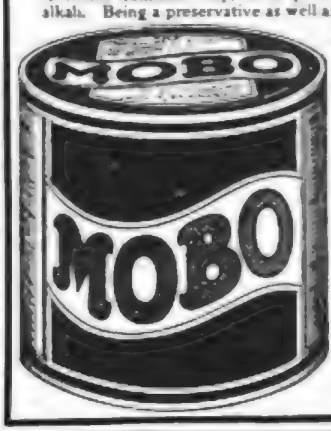
The Care *of the* Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

Mobo, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

MOBO

is unlike common soap, as it positively contains no free alkali. Being a preservative as well as a cleanser, it prevents varnish or paint from peeling or cracking, and adds a fine gloss to the surface.



Mobo may be used with profit on leather goods, harness or woolen fabrics. Cannot harm the most sensitive skin, as it is a purely vegetable oil preparation and absolutely contains no free alkali. Put up in 2-lb. and 8-lb. cans; also in tubs, half barrels and barrels.

If your supply man does not keep *Mobo*, send us his name and address, and we will see your wants are supplied.

JOHN T. STANLEY
New York.

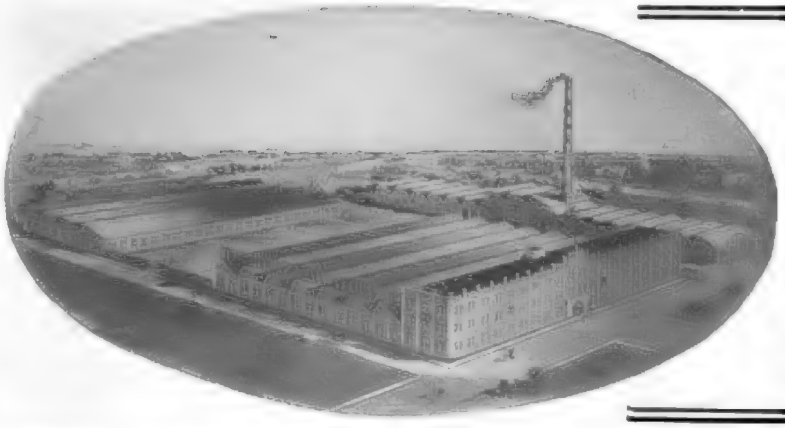
HAVE YOU SEEN THE NEW **KOKOMO** MECHANICALLY - ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.



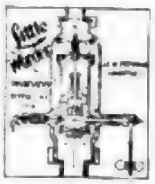
The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

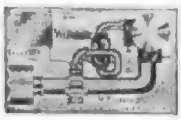
THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

PATENTS PENDING IN ALL COUNTRIES

The Little Wonder Carburetor Manufacturing Company

347 Franklin Street
BUFFALO, N. Y.





This carburetor will fit all classes of motors, from one-horse power up, and is especially adapted to automobile and marine engines.

The "Little Wonder" Carburetor, used in connection with our Hot Air Generator on the exhaust pipe, is guaranteed to increase your horsepower from ten to twenty per cent, economizing in fuel consumption, giving a perfect mixture in quantity and quality at all engine speeds; it is 100 per cent safer than the float-feed carburetor, and is positively guaranteed not to ignite or explode, and is absolutely impervious to flame or back-firing.

The "Little Wonder" Carburetor is hot-air jacketed, as enclosed cut shows, thereby increasing the vaporization of the gasoline, and giving a hot gas mixture under all atmospheric conditions. Our Carburetor will not leak, freeze, flood or cause any trouble, as is the case with other carburetors now on the market. Our object in placing this carburetor on the market has been to supply the increasing demand for an entirely automatic, simple, reliable and absolutely fireproof form of carbureting device. That we have succeeded in our efforts has been thoroughly proved by the appreciation of the many users and advocates of the pump-feed type of carburetor. In the "Little Wonder" Carburetor the air as well as the gasoline can be regulated at will by the operator. Our Carburetor is so simple that anyone of ordinary mechanical ability may perfectly adjust and apply same to motor.

Prices quoted upon application.

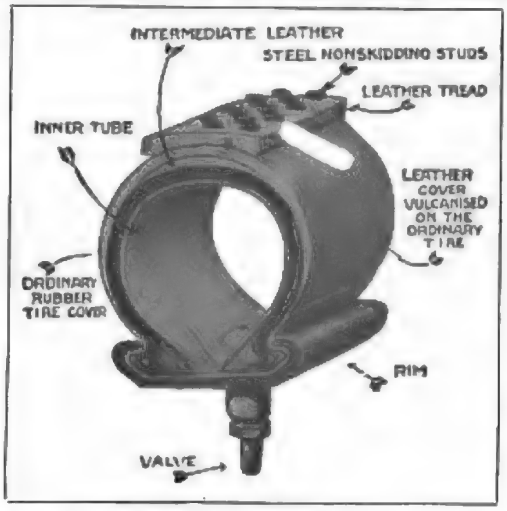
Generator, listed $10.00 **Carburetor, listed $15.00**

Ask for quotation and give diameter of exhaust pipe, 1½" up.
We build Gas Engines and Steam Engines; also Racing Machines for roadway and waterway, all combined in one. See cuts.
Ask for prices on our Wheel Crank for pulling off and on wheels.

Respectfully yours,

J. C. W. FERRAR, General Manager and Owner.

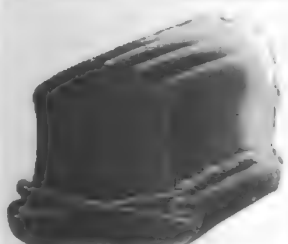
SAMSON
LEATHER TIRE
NON-SKIDDING :: :: PUNCTURE PROOF



A. E. GALLIEN, Manager

UNITED STATES BRANCHES:

New York: 12 West 33d Street — Chicago: 1461 Michigan Boulevard
Boston: 20 Park Square — Philadelphia: 1120 Chestnut Street



Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

Motz Clincher Tires

Solid Rubber or Cushion Types and made to fit any standard clincher rim in which pneumatic tires are used

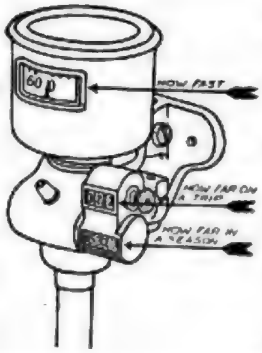
Resilient and "there with the wear"

The Motz Clincher Tire & Rubber Co., Akron, Ohio, U.S.A.

OBSERVE THE FASTENING DEVICE

Tire Fastener for Ordinary Work

Digitized by Google



THE AUTO-METER "BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy

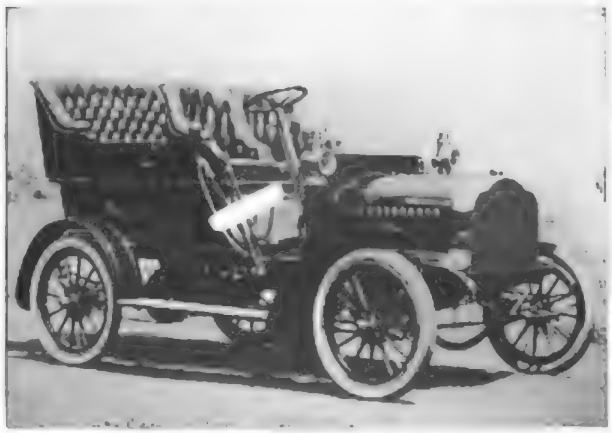
The **Speed Dial**, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The **Trip Dial** records the distance traveled on a trip or for a day.
The **Season Dial** records the total distance covered in a season.
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1681 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

Compound MOTOR CARS



Model Four, $1,400

HALL BROTHERS

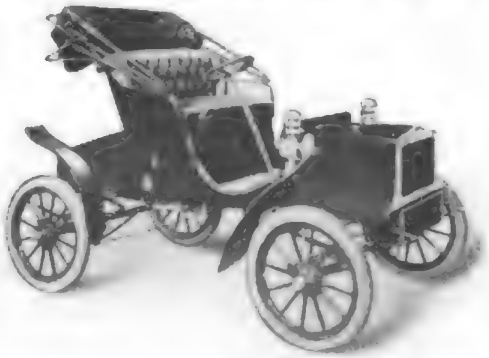
The E. H. V. Co., NORWICH, CONN.,
Middletown, Conn. Sept. 5, 1905.

Gentlemen:—The Compound that I purchased of you last Spring is giving excellent satisfaction. I have used it considerably cross country touring and find it both reliable and economical. I can cheerfully recommend the Compound to any one desiring a quiet, smooth running car.

Yours respectfully, F. B. HALL.

THE E. H. V. CO., MIDDLETOWN, CONNECTICUT

A TIMELY WORD TO DEALERS



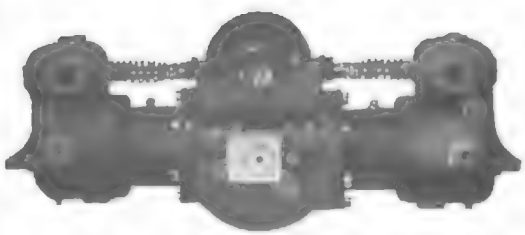
THE Model A GALE $500

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer Knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.



"BEAVER MOTORS"

Maximum Power—Minimum Weight

All bearings and parts subject to strain of ample dimensions. Get particulars and prices for your 1906 cars

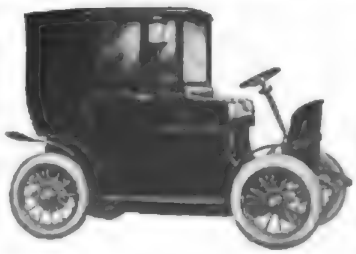
12-14 H. P. OPPOSED
16-18 " "
22-24 " VERTICAL

BEAVER MFG. CO., MILWAUKEE WISCONSIN

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY

Members Association Licensed Automobile Manufacturers

Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

OFFICE MANAGER

(Must be proficient in double entry book-keeping)

EXPERIENCED CORRESPONDENCE MAN

SUITABLE REPRESENTATIVE FOR FOREIGN TRIP

All departmental heads and prominent attachees must become financially identified with the business.

Address

"GOMMERGIAL"

CARE OF MOTOR AGE, CHICAGO

Latest European Novelties

RACING CAR
No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on repuest.

No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES

Broadway and 39th St., New York 318-320 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

A SPLENDID

DOCTOR'S CAR

THE ADAMS-FARWELL MOTOR CAR

Three Cylinder Gasoline Motor :: Revolving :: Air-Cooled

Operated from rear seat or from folding front seat
All windows may be lowered, making an open car

NO WATER. NO RADIATOR. NO FLYWHEEL. NO MUFFLER.
AUTOMATICALLY GOVERNED. NO FAN.

Cylinders 5 in. Bore. Displacement 265 cu. in. 20-25 Horse Power.

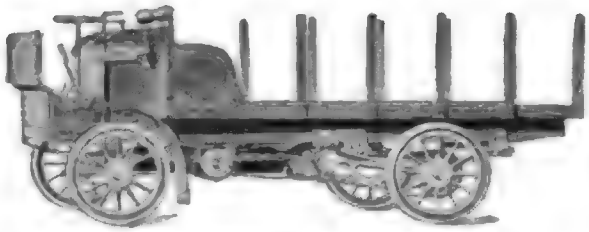
$2,500

Chicago Salesroom: 1536 Michigan Ave.

THE ADAMS COMPANY

DUBUQUE, IOWA, U. S. A.

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

25 Pound Pail $1.15

60 Pound Tub $2.50

Or in Barrels

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

HOFFHEIMER SOAP CO.

CHICAGO

Automobile Lamp Manufacturers

This little Acetylene Lamp Burner has been the source of a great deal of annoyance. This list is published for the benefit of those who desire to avoid it.

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass

Badger Brass Mfg. Co. (Solar), Kenosha, Wis.

Commercial Acetylene Co., New York City, N. Y.

R. E. Dietz Co., New York City, N. Y.

A. H. Funke, New York City, N. Y.

Gray & Davis, Amesbury, Mass.

Manhattan Lamp Works, New York City, N. Y.

Motor Car Equipment Co., New York City, N. Y.

New York Coach & Auto Lamp Co., New York City, N. Y.

Rose Mfg. Co., Philadelphia, Pa.

Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

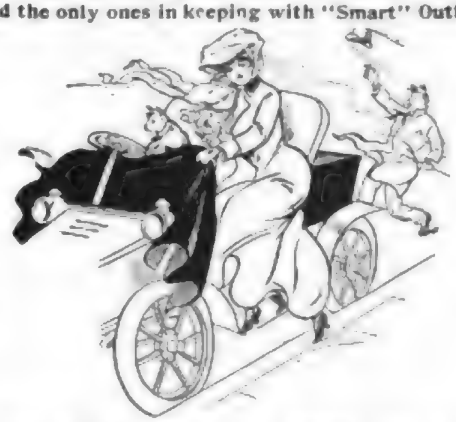
Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Collar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

Digitized by Google

RILEY "Auto" ROBES

THE ONLY ROBES
that harmonize with the Automobile
and the only ones in keeping with "Smart" Outfits



WIND-PROOF
DUST-PROOF
WATER-PROOF
OIL-PROOF
ACCORDING
TO SEASON

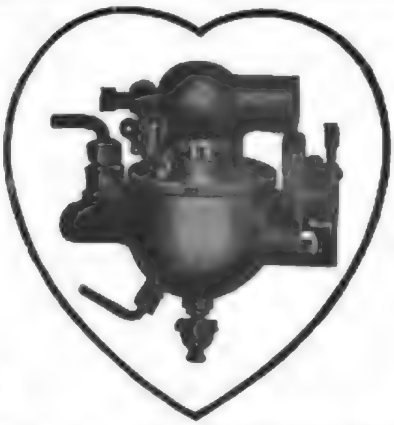
FOR
SPRING
SUMMER
AUTUMN
OR
WINTER

Forty Styles and Prices — Illustrated Catalog on request

WM. B. RILEY & CO., *Makers*, PHILADELPHIA

"Riley Robes are Right"

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

SIXTY-FIVE automobile and marine engine builders in the United States and Canada have adopted the Schebler. No other carbureter made in the world can show this record.

SCHEBLER SPECIAL for Cadillacs, - per pr. $ 0 00
OLDSMOBILE CARBURETER, " 18 00
FORD, Two-cylinder, " 18 00

Standard sizes will fit all other automobiles. Agencies in all the principal cities of the world.

F. H. WHEELER

Manufacturer and Sales Agent

INDIANAPOLIS, IND.

H. J. Edmond, 44th St. & 6th Ave., N. Y.
E. B. Belcher, 26 Green St., Malden, Mass.
Jos. Brassard, Central Falls, Rhode Island.
Ellsworth Foundry & Machine Shop, Ellsworth, Me.
National Elec. Supply Co., Washington, D. C.
Smith Elec. Engineering Co., Watertown, N. Y.
The Wallace Bros. Co., Norfolk, Va.
North Philadelphia Auto Station, 3423 North Broad St., Philadelphia, Pa.
P. J. Dasey, 431 Wabash Ave., Chicago, Ill. Factory Representative.
Wilson & Co., Ottawa, Ontario, Canada.
Auto Supply Agency, 3939 Olive St., St. Louis Mo.
R. F. Bayley & Co., New Orleans, La.
Consolidated Supply Co., Denver, Colo.
Los Angeles Automobile Co., Los Angeles, Cal.
Hughson & Merton, 105 Front St., San Francisco, Cal.
McCulloch & Boswell, Winnipeg, Man.
Canada Cycle & Motor Co., Toronto Junction, Can.
Turnbull & Jones, Dunedin, New Zealand.
Geo. Nelll & Co., 38 Fenchurch St., London, England.

BRISCOE MFG CO.

OLDEST AND LARGEST MAKERS
OF
AUTOMOBILE RADIATORS

DURING the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000 of our radiators are now cooling automobile engines.

Our standard honey comb radiators are of true cellular construction, allowing cross circulation and accounting for their high-cooling efficiency per pound of weight of cooler.

The hit of the year 1905 in radiator design has been our flat tube construction with gang fins. We make special designs for every class of car from the light runabout to the heaviest truck or omnibus.

The finish on Briscoe fenders is unexcelled. 1906 styles on metal dashes, hoods and runabout boxes are prepared and we are daily booking contracts for next season's business.

COOLERS FENDERS

HOODS TANKS

By dealing with us you get the benefit of our long experience and the protection of the many patents we own, covering our methods of construction.

The Pierce Great Arrow car which won the Glidden trophy was equipped with a Briscoe radiator. Of the twelve American water-cooled gasoline cars which received first certificates at the end of the tour six of the radiators were made in our shops, four were made by the car builders, and only two were made by other radiator manufacturers. These facts are typical of our prestige.

Our two large plants are ready to take care of our rapidly increasing business. We cannot only promise but make deliveries.

Write to our nearest office for estimates and get in line for 1906.

BRISCOE MFG CO.

DETROIT, MICH. and NEWARK, N. J.

Digitized by Google

Automobile Bows

ARE BEST

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio

Spark Proof

"The Spark Always Jumps."

There are no gas leaks, no splitting, cracking or breaking. The spark plug is all hand turned porcelain and so large and strong it will stand over 2500 degrees Fahrenheit.

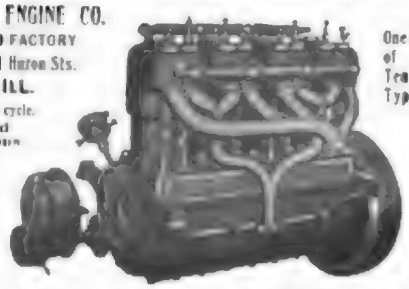
No knowledge needed for repairs. $2 postpaid or at your dealer's. Infringers will be prosecuted.

Send for free treatise telling how to correct and avoid electrical equipment troubles of gasoline automobiles.

C. A. MEZGER, 203 West 80th Street, New York

MOTORS—All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury and Huron Sts.
CHICAGO, ILL.
1½-40 h. p. 2 and 4 cycle.
Designs and Specifications
From us are up to date and money savers.
SPECIAL SHOP WORK
Inspecting and Testing Experts
Transmissions, Reverse Gears, Marine Outfits
Telephone North 1007



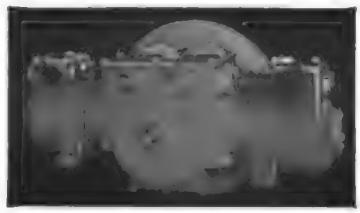
One of Ten Types

Type B—3½ x 4½ Engine

---

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

RADIATOR MONOGRAMS
ANY SIZE
ANY STYLE
ANY NUMBER OF LETTERS
Discounts to the Trade
$6.00

S. D. CHILDS & COMPANY
200 Clark Street, CHICAGO

GILSEY HOUSE

UP-TOWN

Corner 29th and Broadway New York

Rates $1.50 up **Cafe a la carte**

GEORGE W. MOORE, Manager

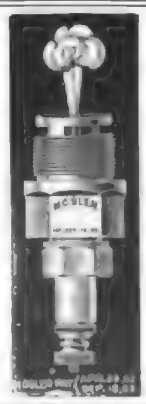
Auto Apparel

OF EVERY DESCRIPTION

FOR MEN AND WOMEN

SCANDINAVIAN FUR AND LEATHER CO.
14-16 W. 31d St. (Op. Waldorf)
New York
Sales Agents for San Francisco Rose Bros., Inc.

Write for our NEW 1906 Complete Catalogue.



MOSLER "SPIT-FIRE" PLUGS

THEY ACTUALLY "SPIT-FIRE" while OTHERS SPARK ONLY

BASE — Facilitates Sparking. Makes Plugs Spit-Fire. Acts as Condenser of Electricity. Protects Insulation and Sparking Points.

Standard Size, $1.50, Postpaid. Special, $2.00

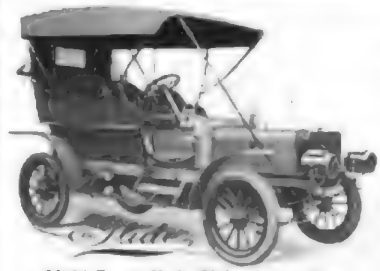
With Patented Protector, $.50 additional
Used by the Leading Manufacturers
Insist upon Name and Patent Dates
Beware of Valueless Imitations

The Mosler Timer
is constructed on a Scientific Basis

WRITE FOR LIBERAL DISCOUNTS

A. R. MOSLER 1679 Broadway New York

Digitized by Google



Model E. 30 H. P. Glide, Vertical Four Cylinder Motor

1906 MODELS
Now Ready

Model E is a 30 H. P. vertical four cylinder car with bevel gear drive.

Model F is an 18 H. P. two cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS
The BARTHOLOMEW CO., 415 Bradley Av, Peoria, Ill.

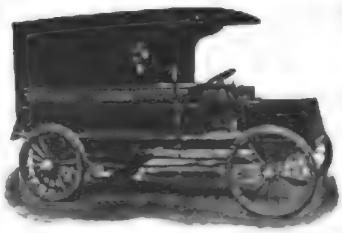
U. S. Patents Pending.
Patented in England, France and Belgium.

THE WHITLOCK COOLER
Tested and Adopted by
90 Per Cent
of the Leading Manufacturers of
HIGH GRADE CARS FOR 1903-1904-1905
Any Design or Style of Cooler Made to Order
THE WHITLOCK COIL PIPE CO.
Hartford - Conn.

Monogram Oils
....Made by....
Columbia Lubricants Co. of New York
78 Broad Street, New York City
"FIRST AID TO AUTOMOBILES"

DISTRIBUTING DEPOTS
....Also at....
Boston Cleveland Washington Chicago
Denver San Francisco and Toronto, Canada

Synnestvedt Machine Company
Pittsburg, Pa. :: Manufacturers of
Electric Vehicles



Delivery Wagons
Trucks
Stanhopes
Surreys
Busses

Eastern Branch, 1005 Drexel Bldg., Philadelphia.
Commercial Automobile Co., Distributors, 1256 Michigan Ave., Chicago.

1905 - VESTA - 1905
Ignition Battery
4 Volt, 60 Amp. hours
9½x3¾x8¾. Price, $18.00
6 Volt, 60 Amp. hours
9½x5⅝x8¾. Price, $27.00
8 Volt, 60 Amp. hours
9½x7x8¾. Price, $36.00
Satisfaction Guaranteed by
VESTA ACCUMULATOR CO.
1336 Michigan Avenue, CHICAGO
Phone South 952
Eastern Agents, THE E. E. HARDY CO.
35 W. Broadway, New York

LATEST TYPE **WILLARD** LATEST TYPE
STORAGE BATTERIES
Are operating Electric Automobiles Regularly
75 MILES AND OVER ON ONE CHARGE
Write for Particulars
The Willard Storage Battery Company
Cleveland, Ohio

HIGHEST GRADE ONLY
Aluminum Castings
THE ALLYNE BRASS FOUNDRY CO.
CLEVELAND AND DETROIT

That Weak Storage Battery

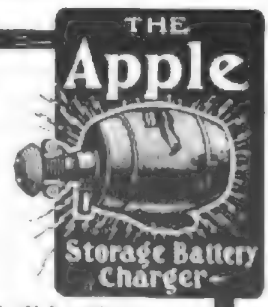
Is apt to cause trouble when you least expect it. Insure yourself against all ignition troubles by installing an

APPLE AUTOMATIC SPARKER

Delivers the current with unfailing regularity. Keeps the battery charged at all times. No launch, automobile or stationary engine should be without one. We make over 80 different articles for ignition purposes.

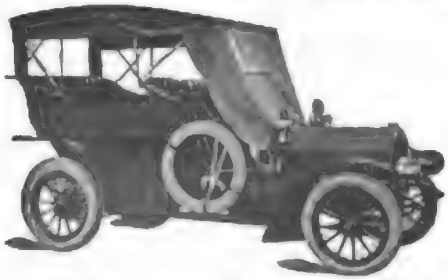
WRITE US FOR FURTHER INFORMATION

The Dayton Electrical Manufacturing Co. 25 Beaver Bldg., DAYTON, OHIO.

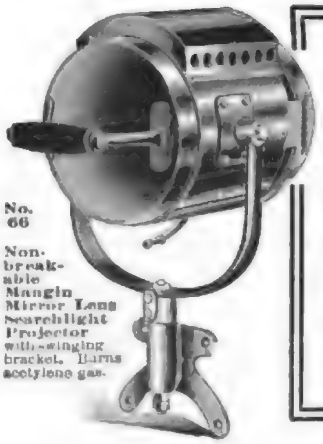


Digitized by Google

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA



No. 66
Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The Neverout
Mirror Lens Searchlight
throws its powerful rays farther ahead than any other searchlight.
The pure, dry quality of gas furnished by the new *Neverout*
patent safety gas producer
gives an intensely white flame and is instantly lighted and extinguished.
Write for free illustrated catalogue.
ROSE MFG. CO., 912 Arch St., Philadelphia

IMPERIAL WIXON
Compound Air Pump
BEST PUMP ON EARTH
ASK YOUR FRIENDS
$5.00 ON APPROVAL
Ask your dealer or write us today
THE IMPERIAL BRASS MFG. CO.
247 S. Jefferson Street, CHICAGO
Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

MUD
FORGET IT AND USE
WEED'S TIRE GRIPS.
POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST. NEW YORK CITY.

A New Era in Carbureters

THE GARLLUS AUTOMATIC CARBURETER is a perfectly automatic carbureter, without a float, without compensater, easy to start, sure to run. So simple it cannot get out of order. Greatest economy. Highest efficiency. An easy starter on four cylinder engines. Money refunded if not satisfactory.

The Goddard Machine Co., Holyoke, Mass. says: "The GARLLUS CARBURETER gives a 10 per cent higher efficiency than any carburetor we have tried, producing in a test two h. p. more than the ..... and one h. p. more than the..... We believe in it thoroughly." (These were two prominent float feed carbureters.

For further particulars address
THE WINKLEY COMPANY, P. O. Box 243, Detroit, Mich.

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.
S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE,
but cannot cut the journal.
In ordering Phosphor Bronze Castings is to adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

Veeder
ODOMETERS
For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will
"It's Nice to Know How Far You Go."
THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

STOLP COOLERS

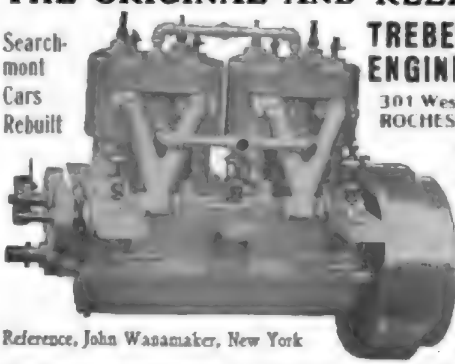
Patents Pending

GOOD COOLERS
Stolp Mfg. Co.
CHICAGO

Digitized by Google

THE ORIGINAL AND RELIABLE

Searchmont Cars Rebuilt



TREBERT GAS ENGINE CO.

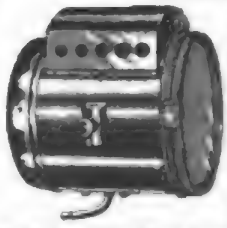
301 West Main St.
ROCHESTER, N.Y.

Up-to-date Engines, Transmission Gears and Clutches. Equal to the very latest French production; air and water cooled motors. Air, 1 to 4 cyl., 2 to 15 h. p. Water-cooled Motors, 1 to 3 cyl., 10 to 45 h. p.

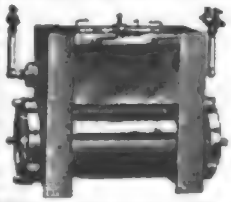
Reference, John Wanamaker, New York

COLUMBIA SEARCH LIGHTS AND GENERATORS

Generator No. 3—Capacity 54 oz.



Will supply from one to six burners. Equipped with two Carbide Cups. One cup can be used on from one to six burners, keeping the other in reserve, or both cups can be used at the same time. When large quantities of carbide are used in the generator, considerable heat is evolved, and it is desirable to keep the generator as cool as possible.



We guarantee our Generators to be better than most, and as good, if not better, than any.

Models: A, 5-in. Mirror Lens. B, 6-in. Mirror Lens. C, 7-in. Mirror Lens. D, 8-in. Mirror Lens. With Adjustable Burners.

HINE-WATT MFG. CO. 58-60 Wabash Ave. Chicago

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1363 Michigan Ave., CHICAGO, ILL. Tel. So. Ch 1301
ST. LOUIS, MO.

STORM APRONS

Runabout size, 2 openings	$7.50
Tonneau size, 4 openings	11.00
Touring Car size, 5 openings	13.50
Capes, 1 opening	2.00

Our Storm aprons are made of heavy weight rubberized cloth with plaid back. Prices include fastenings for attaching to any machine. Terms: Cash with order. Money back if you are not satisfied.

Wood Chain Tire Grips

Send us the size you need and we will quote you a low price.

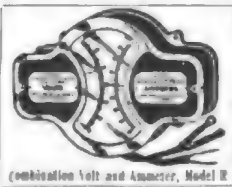
Mr. Dealer: Write us for our "Special Lead" on above goods.

THE BALL-FINTZE CO., Newark, O.

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.



Combination Volt and Ammeter, Model R

Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works: Waverly Park, NEWARK, N. J.

New York Office, 74 Cortlandt Street

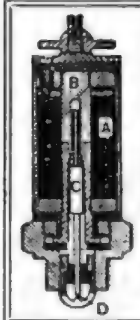
Switchboard Int'l Type A

Eclipse Pocket Ammeter

For General Battery Testing
0 to 20, 0 to 30 Amperes.

"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.

Eldredge Electric Mfg. Co.
Springfield, Mass. U. S. A.



LOW TENSION MAGNETO

THE GARON SYSTEM OF IGNITION

Combines all the good points of **the Jump Spark and Make and Break**, and is perfectly reliable. Easily applied to any engine, whether originally built for jump spark or make and break ignition.

Absolutely guaranteed *Let us show you how perfectly it works*

A. J. MYERS, Mgr. Am. Branch 1556 Broadway, New York City

For Boiled Down Information About

AUTOMOBILES & WELCH CARS

in general in particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.
Factory, Pontiac, Mich.

Special Prices on Clincher Tires

FOR OCTOBER

One of the best tires on the market. We are on the inside.

	Casing	Inner Tube
28x2½ . .	$13.94	$3.84
28x3 . .	22.80	4.64
30x3 . .	24.40	4.96
30x3½ . .	31.69	7.04
32x3½ . .	33.75	7.52
32x4 . .	38.93	9.09

We can supply other sizes at proportionate prices.

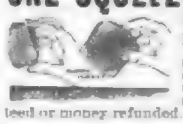
Neustadt Automobile & Supply Co.
826-28-30 S. 18th St. ST. LOUIS, MO.

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y.

ALUMINUM CASTINGS BRONZE

ONE SQUEEZE DOES THE BUSINESS



Nothing like it. Invest a quarter in a "GIBSON" Trick Purse, you'll never regret it. No removing of gloves to dispose or remove coin. Always open for money. All leather. Guaranteed or money refunded. Free samples for agents and dealers.

GIBSON COIN PURSE CO., Box 1002, Bellefontaine, O.

SOMETHING NEW

IN BOTH AIR AND WATER COOLED **MOTORS** WRITE US FOR PARTICULARS

FAST MCH. & TOOL WKS.

28th and Greenfield Aves. MILWAUKEE, WIS.

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., XV Ft Wayne, Ind

CHAIN TOOL

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 302 JACKSON BOULEVARD, CHICAGO

SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

372 Birnie Ave Brightwood SPRINGFIELD MASS.

Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue,

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

People Say The U. S. Is Best

Lifts any Car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For

THE U. S. JACK CO.

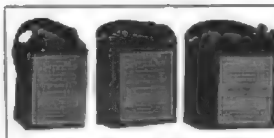
352 S. Claremont Ave. CHICAGO.

Special Design Finest Quality Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.

315 Michigan Ave. Chicago



Volt — Capacity — Amp.—Hours
Prices—$9, $9, $12
Other styles—
$2.25 to $12.00
Established 1900
Catalogue on Request.

AMERICAN BATTERY COMPANY
105 South Clinton St. CHICAGO, ILL.

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.

A PLEASURE TO HEAR

THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches

Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.

970 Hamilton St., Dept. B, CLEVELAND

New York Branch, 148 West 50th St.

STA-RITE

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary

Condense Your Orders

thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1905, price list.

The R. E. Hardy Co.

125 W. Broadway, N. Y.

No. 4, 5-in. Porcelain, $1.50

P. J. DASEY 431 Wabash Ave., Chicago

No. 34, 5-in Mica, $1.75

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

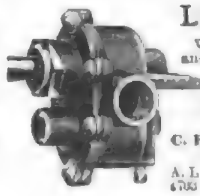
Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.

BUFFALO, N. Y.



Lobee Gear Pump

Well adapted for Oldsmobile and other makes. Will be with any type of radiator. Easily attached. Write for price

LOBEE PUMP CO.,
240 Terrace, Buffalo, N. Y.

C. E. Miller, Agent,
97 Reade St., New York

A. L. Dyke Automobile Supply Co.
4703 Olive St., St. Louis, Mo.

Graphite for the Motor

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.

Jersey City, N. J.

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work

HUSSEY DROP FORGE & MFG. CO.

2020 Axtell Street CLEVELAND, OHIO

WHEN YOU THINK SPARK PLUGS

$1.50 THINK NEVER-MISS THAT'S ALL $1.50

The up-to-the-minute Jobber and Retailer can supply you. Ask him. There is none just as good. Stand ⅝ in. Winton. Auto Car Metric. Fully guaranteed.

You go faster, farther and get back with a Never Miss. Just try and see. Coils, Battery Connections, Chain Tools, &c. There are a lot of Plugs, but only one Never-Miss, and made at Lansing, Mich.

NEVER-MISS SPARK PLUG CO.

1905 YANKEE GRADE METER. PRICE $7.5

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.5

Double Insulation, Compression End, Rigid Point. Most reliable and popular Plug on the market. 400 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St.
NEW YORK, 49th St. & 8th Ave
PHILADELPHIA, 240 N. Broad St.
BUFFALO, 500 Pearl St.
ROCHESTER, 170 South Ave.
BOSTON, 30 Stanhope St.
DENVER, 1449 Clarkson St.
SAN FRANCISCO, 635 Howard St.
CHICAGO, 200 E. Lake St.
ST. LOUIS, 809 Walnut St.
ST. PAUL, 372 Minnesota St.
DETROIT, 255 Jefferson Ave
PITTSBURG, 5005 Centre Ave.
SAVANNAH, 309 Bull St.
MINNEAPOLIS, 3d Ave. S. & 8th St.
PASADENA, 33 S. Raymond Ave
PORTLAND, ORE., 140 Fifth St., N.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

The Persuasive Instrument

¶ The average person who drives a motor car has a desire to speed—to "let 'er out."

¶ But we have yet to find the man who has an insane desire to get within the clutches of the law.

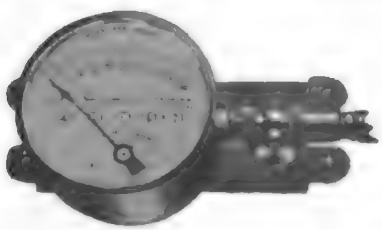
¶ *The Jones Speedometer* has that peculiar influence over the speeding motorist—if he is beyond the limit—there is that "arrow"—a constant reminder. It persuades him to go slower. Thus it accomplishes a great service.

¶ And to each user of The Jones Speedometer we present our brass Protection Tag which warns the officer of the law, not to arrest on guess work.

JONES SPEEDOMETER

Manufactured by Jos. W. Jones

125 West 32d Street, - NEW YORK



This Is NOT

A FAIRY TALE

We guarantee to increase the spark in your cylinders by

ONE HUNDRED PER CENT

Through our PATENTED

Steel Armored Ignition Cable

Adopted by the Leading European Firms

It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!

HERZ & CO., Civil Engineers, 187 Elm St., New York

The largest manufacturers of Ignition Material in America.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort*, and *one twist* cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it comes out of its holder, and the gaskets of copper drop with it. No digging!

It is *nickeled* inside and out. *Highly polished* and *dust-proof*. Sparks between two *adjustable* points and not between *any* point and the *shell*. Its points are *protected*.

Porcelains are *hand burned* and so perfectly glazed that soot cannot *stick* to them. Their *threads* are cut to perfection, and every particle of the idea of *cheapness* is left out of them. Can you think of a way to improve them regardless of cost?

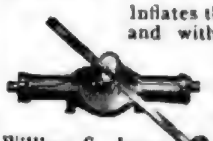
Postpaid, Anywhere, $2. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

Peerless Automobile Jacks

Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight 4½ lbs., price $2.50. Express prepaid in the United States. OLIVER MFG. CO., 205 S. Desplaines St., Chicago, Ill.

LEA TIRE PUMP



Inflates the tires uniformly and with one-tenth the effort required by other pumps.

Write for latest illustrated booklet B and proposition to agents.

William S. Jones, 112 N. Broad Street, Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

Non-Fluid Oils

Are recommended in the instruction books of several mfrs of cars. They reduce lubrication and repair bills to a minimum. Ask your dealer or write us today for free sample; same will be convincing.

N. Y. & N. J. Lubricant Co., 79 9th St., San Francisco

WITHERBEE

Storage Batteries

Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.

New Haven, Conn.

SPROCKETS

Chains and Differentials

FULLMAN WHEEL CO.

2121 RUNNING STREET CHICAGO, ILL.

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY

WRITE FOR SAMPLES AND PRICES

MILWAUKEE STEEL FOUNDRY CO

MILWAUKEE, WIS.

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation does not slide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

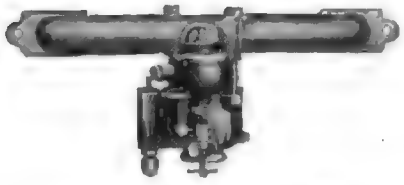
OUR MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.

108 WALKER STREET NEW YORK

Digitized by Google

HOLLEY CARBURETORS



Special Model E for 1905 Winton

We are now prepared to furnish our new **Model "E"** carburetor for 1905 Winton cars Models B and C. This carburetor is furnished with aluminum manifold, so that old carburetor can be removed and the new one bolted in place with very little work. Price of special Model "E" carburetor with manifold for Model B and C Wintons, $18.00.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
⅜ in. and ½ in. gasoline outlet	$11 00
1 in. gasoline outlet	12 00
1¼ in. gasoline outlet	13 00
1½ in. gasoline outlet	14 00

Increase the power of your car by equipping it with one of the following special **Holley Carburetors.**

SPECIAL SIZE FOR

Oldsmobile Runabout	$12 00
" Tonneau Car	11 50
" Touring Runabout	11 50
Ford 10 H. P., Model C	11 50

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.
672 Beaubien St., DETROIT, MICH.

CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1197
1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1313 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1062
1323-1325 Michigan Avenue, Chicago

RENZ & CO MANNHEIM, GERMANY ESTABLISHED IN 1867
THE OLDEST AUTOMOBILE MAKERS IN THE WORLD
FIRST CAR CAME OUT JANUARY 1, 1898
OVER 1,000 NOW IN SUCCESSFUL OPERATION
Prices: $3,500 to $15,000
ALL CARS IMPORTED COMPLETE (LESS TIRES)
MEAD CYCLE CO. Chicago

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES FOR OWNER AND DEALER
SEND FOR CATALOGUE No. 49
EXCELSIOR SUPPLY CO
ESTABLISHED 1876 CHICAGO

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1528 Michigan Ave., Chicago
Telephone, South 1058

GET YOUR TIRES FILLED WITH OUR
TIRE FILLING
And rid yourself forever of that constant fear of punctures, leaky valves, etc.
Write for particulars and testimonials
PULLMAN AUTO CAR CO.
5035 Cottage Grove Ave., CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
136 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer Stevens-Duryea Orient
Pierce-Arrow Oldsmobile Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3249 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1922-26 Michigan Ave. Phone 1302 South
322-26 Fourth St. Phone 2781 Main

Digitized by Google

SKINNER
Compound Tire **PUMP**

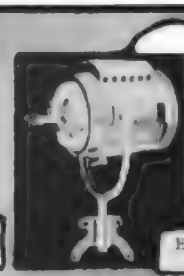
200 lbs. pressure with less effort than 50 with any other
Polished Brass :: Small :: Strong :: Simple

$5 ON APPROVAL
AT ALL DEALERS
LET US SEND YOU A SAMPLE

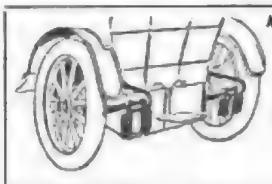
Sales Agents
New York—E. J. Willis Co.
" " Chas. E. Miller.
" " A. H. Kastner.
" " Wm. Wooster Co.
" " Judson-Downing Co.
Boston—Iver Johnson Sptg. Goods Co.
Boston—Boston Cycle & Sundry Co.
Baltimore—Coggins & Owens.
Chicago—Excelsior Supply Co.
Denver—The Consolidated Sup. Co.
Detroit—Monmier Auto & Cycle Supply Co.
Providence, R. I.—Pope Mfg. Co.
St. Louis—A. L. Dyke Auto Supply Co.
San Francisco—Van Zandt & McIntyre.
Rochester, N. Y.—The Sidney B. Ruby Co.
Washington, D. C.—National Elect. Supply Co.

SKINNER & SKINNER
Manufacturers
4133 Indiana Ave. - CHICAGO

E R J



FULL LINE Both GAS and OIL
WE GUARANTEE IT
Edmunds & James Mfg. Co.



Absorbs all vibration

The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads
Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.

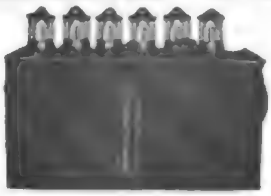
ALUMINUM
Aluminum Automobile Parts a Specialty
The Pittsburgh Reduction Company
Pittsburgh, Pa.

TRIUMPH GASOLINE GAGE

Applicable to tanks with or without pressure to show quantity of gasoline. SIMPLE, RELIABLE, SUPER OR in workmanship. Nothing to get out of order. No infringement. Gages for tanks of any size and to gage any liquid. The only gage endorsed by builders of first-class cars. All gages warranted. Send for illustrated booklet 10 showing our new gage and you will be willing to throw away your measuring stick. NO COBS, and EVERYTHING OPEN to show construction. When ordering give name of car and depth of tank. Can be had of dealers in Auto Car or Boat Supplies, or from

Boston Auto Gage Company
Factory: 8 Waltham St., Boston, Mass.
Office: 613 0-6 South Bldg.

Force Feed Lubrication
Constant Sight Feed. No Liquids

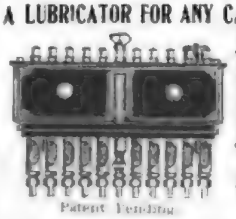


McCord & Co., 1002-80 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

E. F. LESTER, Mf'r.
ALUMINUM ARROW BRAND SOLDER AND FLUX.
FAYETTEVILLE, N. Y.

"SOLDERENE"
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.
Sample 10c. Dealers Write for Price.
CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed is itself an automatic pump equally well used with any system of lubrication.
Made with any number of feeds. Write for circular.
Patent Pending Manufactured by
J. T. PEDERSEN, 642-644 First Ave., N. Y.

Colorado
At Her Best

In late summer Colorado is at her best. The green of the verdure on mountain and meadow is slowly turning to crimson and gold. Afar looms a peak whose snow-capped summit is enshrouded in autumnal haze. The air is laden with the spice of mountain pines and fir trees.

Colorado is surely the best place to go for the autumn vacation.

Very low rates via the Rock Island—Standard and Tourist sleepers and electric-lighted chair cars.

Go via Chicago, return via St. Louis if you like.

Use this coupon to learn all about it.

Rock Island System

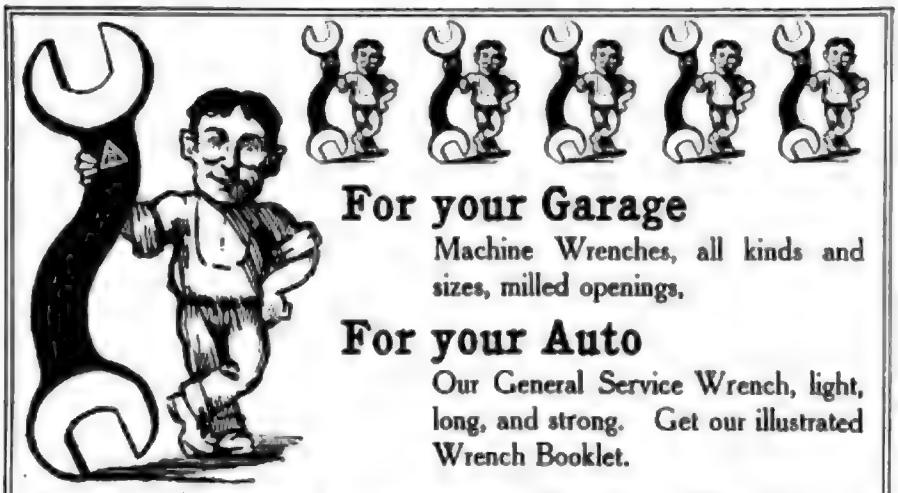
A. B. SCHMIDT, Gen. Agent Pass. Dept.,
91 Adams St., CHICAGO.

Please send me Colorado booklet, with list of hotels and boarding houses, and tell me about Rock Island service.

Name_____

Address_____

Digitized by Google



For your Garage

Machine Wrenches, all kinds and sizes, milled openings,

For your Auto

Our General Service Wrench, light, long, and strong. Get our illustrated Wrench Booklet.

The Billings & Spencer Co. : HARTFORD CONN.

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. in the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

WHAT WE HAVE:

The HERZ TIMER—16 models, to fit any make of motor: Remember: IT'S TOOLSTEEL VS. TOOLSTEEL.
Bougie Mercedes—double stone.
Herz-Distributor—1 coil for all cylinders.
Quenet Coils. Carpentier-Interrupter.
New prices Single, $16; double, $20; triple, $38; quad, $50.

A line of switches of original design; contacts dust-proof covered.
Detachable terminals.
Wire terminals with groove.
Special ignition cables and wires.
Everything for the ignition.
One grade: The Best.

HERZ & CO. Civil Engineers
187 Elm Street, New York
Write for free Vademecum of Ignition.

EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS

ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas.

REST YOUR TIRES with the **"Springfield" Auto Lift**

Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DeV & CO., Pacific Coast Agents, San Francisco

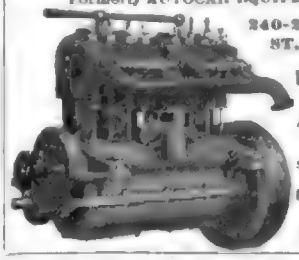
THE SHAWVER CO., Springfield, O.

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.

Formerly AUTOCAR EQUIPMENT CO.



240-244 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETERSON & DRAPER

Direct Factory Representatives.

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 511 Tremont St., Boston, Mass.

ROBERT VOLT - AMMETER

For General Battery Testing. Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS

30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.

63 Shelby St. Detroit, Mich.

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

WANTED—Competent head repair man and foreman experienced in repairing successfully the leading makes of automobiles; must be honest, good habits, industrious; would sell interest in business to right man; city of 100,000 inhabitants. Address P., care MOTOR AGE.

FOR SALE OR EXCHANGE—Touring car for sale cheap, or will give you good trade for your runabout. The Starin Company, North Tonawanda, N. Y.

FOR SALE—1904 model Rambler automobile; 16 horsepower, with detachable tonneau. Apply at 381 Jackson St., St. Paul, Minn.

PEERLESS 35 horsepower touring car, canopy top, with glass front, large rear entrance tonneau, headlights, searchlights, Prest-O-Lite tank and finest equipment throughout. Cost owner $6,000 one year ago; $2,500 for quick cash sale. Kentucky Automobile Company, Louisville, Ky.

FOR SALE—Two Knox observation cars; fourteen passengers; cars used three months on Paul Revere Route; are in perfect running order; company buys larger autos. Apply to Lexington & Concord Sight-Seeing Co., Lexington, Mass.

1903 OLDS in fine shape; price $300. Low price on 2-cylinder 4x5 auto or marine engine. Fred P. Neumeister, Rockford, Ill.

FOR SALE—Patent of "Auto Garment Rack" and sales of same. A fine opportunity for hustler. Write quick. Good reason for selling. Box 866, Bridgeport, Conn.

FOR SALE—7 H. P. double opposed engine in runabout; has 30x3 tires; in good condition all through; has not run 800 miles; with top and dos-a-dos seat; reason for selling, owner wants to leave country; $350 takes it. Box 65, Fond du Lac, Wis.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—15 tube radiator, $10. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—A 6 h. p. engine for Crestmobile, air cooled; machine Model C; cash. Box 55, North English, Iowa.

FOR SALE—Small runabout, complete all but motor, for $125. Address Reinke, 150 W. 68th St., Chicago, Ill.

FOR SALE—Brennen 16 h. p. motor, sliding gear transmission with running gear complete ready for tires and body; same has been used for experiment; all as good as new; will mail photo. Address A. W. Mfg. Co., Lock Box 418, Kansas City, Mo.

FOR SALE—1905 Northern touring car, fully equipped; write for full particulars. J. F. Kellogg, Avon, N. Y.

FOR SALE—Model B Cadillac detachable tonneau and deck, new Swinehart tires rear, & J forward; perfect condition every way; $5 extras; $600. Iowa. MOTOR AGE, Chicago.

FOR SALE—One Ford Model C, side entrance tonneau, painted Ford green; trimmed black leather.

Two Ford and two Cadillac detachable delivery bodies.

Two side entrance Ford and two Olds tonneaus, not painted or trimmed.

Make offer on lot or on one of them separately. M. Crumrine, Greenville, Ohio.

SITUATION WANTED As chauffeur; experienced with high grade cars; A1 reference on interview; temperate. F. E. Stowell, 26 Erie St., Chicago, Ill.

FOR SALE—Winton, 1903, with top, acetylene lights, new rear tires; car thoroughly overhauled and in fine condition. Price $75 Address M. F., care MOTOR AGE.

AUTOMOBILE FIRM closing out business Studebaker electric runabout (brand new) a great reduction. Pierce stanhope (slightly used, fine condition) very cheap. Address 5 Woodward Ave., Detroit, Mich.

FOR SALE—Olds Runabout, just overhauled and in best of running order. Rear tire nearly new. New top, never used. $100 worth of extras. All for $370. Will demonstrate. C. D. Dulin, No. 42, Webster, Iowa.

FOR SALE—1904 Winton touring car with top 2 headlights, baskets, etc.; car in perfect condition; in need of money and will sacrifice for $900. A. W. Granger, Grand Hotel, Cincinnati, O.

Digitized by Google

DEMONSTRATING cars at low prices. '05 Model F Knox touring car, glass front, top, etc., run less than 1,200 miles, $1,500. '05 Elmore touring car, top, etc., run only 500 miles, $1,000. '05 Stanley surrey, fine condition, $750. '05 3-cylinder Cameron runabout, good as new, $500. '04 Stevens-Duryea, $700. Lowell Auto. Corp., Appleton St., Lowell, Mass.

POSITION WANTED

As Sales Manager or in Similar Capacity, With or Without Investment

Will make reasonable investment, if desired, with good concern where services can be utilized; energetic; good correspondent; familiar with sales methods, advertising, etc.; ten years' experience as salesman and manager; three years in auto line. Address Henry C. Hanke, Hotel St. Claire, Detroit, Mich. (until Oct. 20 only).

FOR SALE—One rebuilt auto.; detachable tonneau; 16 H. P.; new tires, body lamps, fine condition; $700. A. P. Robertson, Noblesville, Ind.

FOR SALE—Locomobile steamer, perfect condition, $175; 2 Model "E" Ramblers, good condition, $225-$300; 2 12 h. p. double cylinder Elmores, detachable tonneau seats, $250-$450; 1 machine with 7 h. p. Oldsmobile engine, great bargain, $125; 20 h. p. Phelps, 3 cylinders, $500; Model "E" Rambler with wheel steering, run less than 150 miles, $425; 1903 Winton, 20 h. p., with tonneau, $900; 10 h. p. Ford runabout, $375. E. S. Youse, Reading, Pa.

1904 Peerless, 24-30 horsepower, in first-class condition. Must sell at once, cheap. H. N., care MOTOR AGE.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. G. M., care MOTOR AGE.

FOR SALE—High grade 8 h. p. double opposed engine, $125. 4 h. p. Marine and Auto motors, $65. Write. A. J. Houle Co., 8. East St., Holyoke, Mass.

AUTOMOBILE SCHOOL

CHICAGO SCHOOL OF MOTORING.
The original Automobile School in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request.

Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied.

CHICAGO SCHOOL OF MOTORING,
204 Michigan Ave. Phone Har. 119.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905 "Franklin" runabout in absolutely first class condition, used for demonstration only, and has had the best of care and is in every respect as good as new. R. D. Ramien, 230 Grand Ave., Milwaukee, Wis.

WANTED—Second hand motor cycle for cash. Must be a bargain. B. G. Raymond, St. Cloud, Minn.

FOR SALE—One Apperson Bros. 1903, 40 H. P.; fully equipped for touring; $1,200; best of condition. A. P. Robertson, Noblesville, Ind.

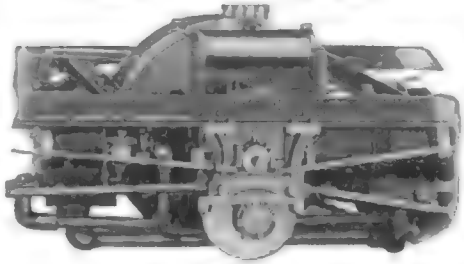
FOR SALE—A good established automobile business located in the northern part of Illinois in city of 40,000. Only automobile business in city, with over one hundred cars in use. Party owning business engaged in other lines and cannot give sufficient time to the automobile work. Address J. G., MOTOR AGE.

WANTED—Second-hand single cylinder automobile engine complete; describe fully. E. R. Dack, Monroe, Neb.

EQUALIZED SPRING TRUSSED FRAME OF THE 1906 Logan

That Car of Quality

One of Many Points of Strength



One of Many Reasons for Comfort

PATENT PENDING

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

TIRES.

ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second-hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

AUTOCAR, type S, with four cylinder 3½x4 Rutenber engine, magneto and battery ignition, McCord force feed oiler, cape top, Rushmore lamps, extra tubes, tools, etc.; good condition. Also Remy four-cylinder magneto and coil (new). Thomas H. Halton, Allegheny Ave. and C St., Philadelphia, Pa.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

UNUSUAL BARGAIN

Peerless car, 1905 model, new August; Continental tires, extra shoe, inner tubes, baskets, robes, clock, full equipment for touring; cost owner $3,600; good as new; will sell for $2,800. A. T. O'Brien, 152 Summer St., Boston, Mass.

MARION side entrance, four-cylinder car, $1,050. A. Zell, Park Ave. and Biddle St., Baltimore, Md.

FOR SALE—Packard Model L, four-cylinder, rear entrance, perfect condition, new last November, run but 1,500 miles; price $2,000. Also Packard four-cylinder, Model N, side entrance, perfect condition, new in June, run 2,000 miles; price $3,100. So perfect is the condition of both machines that they can scarcely be told from new cars. Address Theodore Strawn, Ottawa, Ill.

FOR SALE—1905 Olds Runabout; excellent condition; not run over 800 miles; $20 worth of extras. First check for $570 takes it. H. A. Coon, Manchester, Iowa.

FOR SALE—1904 Indian motorcycle, perfect order, $125. Lock Box No. 97, Muskegon, Mich.

WANTED—Light touring car; good order; priced right. Franklin preferred. Lock 132, Newport, Ind.

FOR SALE—24 horse 1904 Thomas touring car. Top with glass front, 2 gas, 3 oil lamps, horn and tools. Car in first class condition. Cylinders recently refitted. Tires first class, extra tubes. Reason for selling, bought 1905 Thomas. Price, $1,200. H. E. Young, Hanover, Pa.

FOR SALE—Established auto factory in good manufacturing and distributing center in middle west. New models completed. Satisfactory reasons for selling. Address P. O. Box 194, Indianapolis, Ind.

FOR SALE—Haynes-Apperson, 16 h. p. touring car; used very little; in perfect condition; a snap for the early buyers. Burney Bird Auto Co., 319 Wabasha St., St. Paul, Minn.

FOR SALE—1905 Marion air-cooled car, or will exchange for a 1905 White. Dr. A. B. Poore, Cedar Rapids, Ia.

FOR SALE—1904 Northern touring car, with new 1905 motor, extra tires, large headlight. A bargain. Address C. E. Haynes, Cadillac, Mich.

WANTED—Growing concern wants assembling department foreman. Good chance for experienced man to better himself. M. E. M., care MOTOR AGE.

FOR SALE—Model L Rambler; has double opposed motors, 16 h. p.; looks well and is in good condition; tires almost new; sell cheap. One 1905 Model F four-cylinder, air-cooled Premier; new; never run; sell at a bargain. W. E. Rudy, Lima, Ohio.

FOR SALE—New Brass Trimmed, Plate Glass Front, Canopy Top, cost $125.00; our price, $65.00. George Auto Co., George, Ia.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Twin Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

NYBERG AUTOMOBILE WORKS. CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 6.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.
661-673 Beaubien St. DETROIT, MICH.

COMPLETE LISTS

of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 186 Fulton St., New York City
Philadelphia Office, 302 Lippincott Bldg. Boston Office, 15 School St.

Digitized by Google

When your Auto isn't just right, use the

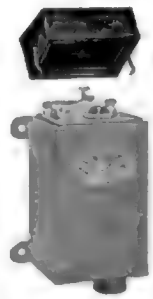
STILLSON AUTOMOBILE WRENCH

The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston
Mass.
U. S. A.

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES



No. 11 Dash Coil

THE SUPERIORITY OF
AMERICAN COILS
is widely known
WE MAKE ALL STYLES
Neat, Compact, Efficient
Write for 1906 Catalog Showing our complete line
American Coil Co.
W. Somerville, Mass.
Auto Supply Co., 1662 Broadway, New York Agent
Geo. H. Bill, 303 Larkin St., San Francisco, Cal.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

Atwater Kent Timer

"No Wabble."
"No Adjustments."
"Two Bearings."
"Contacts Run in Oil and Entirely Enclosed." "Durable Electrically and Mechanically." "Copied from None."
Atwater Kent Mfg. Works,
135 North Sixth St, Philadelphia, Pa.

Diamond Chains
Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.
DIAMOND CHAIN & MFG. CO., Indianapolis

PACKARD ENAMELED IGNITION CABLES
NEVER DISAPPOINT
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?
PROOF AGAINST HEAT, GREASE, OILS and WATER
THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 87
Adams Co. 79
Adland Motor Co. 88
Allyne Brass Mfg. Co. 83
American Ball Bearing Co. 77
American Battery Co. 86
American Coil Co. 92
American Samson Leather Tire Co. 77
Apperson Bros. 84
Atwater-Kent Co. 92
Atwood Mfg. Co. 51
Auto Brass & Aluminum Co. 86
Auto Directories Co. 91
Automobile Equipment Co. 50
Badger Brass Mfg. Co. 44
Baker Motor Vehicle Co. 63
Ball-Flints Co. 85
Bartholomew Co. 83
Beaver Mfg. Co. 78
Billings & Spencer 90
Buston Auto Gage Co. 89
Bowser, S. F., & Co. 86
Briscoe Mfg. Co. 81
Brown, W. H. 86
Brown, S. N., & Co. 82
Buckeye Mfg. Co. 70
Byrne-Kingston Co. 59
Cadillac Automobile Co. 57
Cadillac Co. of Illinois 88
Canedy, Earl 87
C., R. I. & P. R. R. Co. 80
Champion, Albert, Co. 90
Childs, S. D., & Co. 82
Cleveland Motor Car Co. 71
Coey, C. A., & Co. 88
Columbia Lubricants Co. 83
Columbus Buggy Co. 57
Continental Caoutchouc Co. 61
Continental Engine Co. 82
Continental Motor & Mfg. Co. 90
Corbin Motor Vehicle 62
Corwin Mfg. Co. 75
Cullman Wheel Co. 87
Dayton Electrical Mfg. Co. 83
Dayton Motor Car Co. 45
De Dietrich, American Branch 38
Diamond Chain & Mfg. Co. 92
Diamond Rubber Co. 73
Dixon, Joseph, Crucible Co. 86
Dyke, A. L., Auto. Supply Co. 90
E. H. V. Co. 78
Eclipse Buggy Co. 86
Edmunds & Jones Mfg. Co. 89
Eldredge Electric Mfg. Co. 85
Electric Storage Battery Co. 87
Electric Vehicle Co. 79
Elmore Mfg. Co. 80
Excelsior Supply Co. 88
Fairmount Engineering Works 88
Fast Machine & Tool Co. 85
Firestone Tire & Rubber Co. 69
Ford Motor Co. 58
Franklin Mfg. Co. 46-47-48-49
G & J Tire Co. 67
Gabriel Horn Mfg. Co. 86
Garford Mfg. Co. 65
Gibson Coin Purse Co. 85
Gilbert Mfg. Co. 87
Gilsey House 82
Githens Bros. 88
Goodrich, B. F., Co. 70
Goodyear Tire & Rubber Co. 60
Hardy, R. E., Co. 86
Hartford Rubber Works 58
Hartford Suspension Co. 90
Haynes Automobile Co. 74
Herz & Co. 87-90
Hine-Watt Mfg. Co. 85
Hofeller Brass Foundry Co. 86
Hoffheimer Soap Co. 80
Hollender & Tangeman 37
Holley Bros. 88
Hussey Drop Forge & Mfg. Co. 86
Hyatt Roller Bearing Co. 92
Imperial Brass Mfg. Co. 68
Imperial Brass Mfg. Co. 84
Imperial Wheel Co. 73
Importers Co. 88
Jeffery, T. B., & Co. ..... Cover
Jones Speedometer 87
Kimball, C. P., & Co. 86
Kirchberger, M., Co. 80
Knox Automobile Co. 80
Kokomo Rubber Co. 76
Leather Tire Goods Co. 60
Lester, E. F. 89
Light Mfg. & Foundry Co. 84
Link Belt Machine Co. 64
Little Wonder Carbureter Mfg. Co. 77
Lloyd Iron Roofing & Paint Co. 74
Lobee Pump & Machinery Co. 86
Locomobile Co. of America 75
Loftis Bros. & Co. 54
Logan Construction Co. 91
London Auto Supply Co. 75
McCord & Co. 89
McDuffee Automobile Co. 88
Mason-Kipp Mfg. Co. 66
Maxwell-Briscoe Mfg. Co. 62
Mead Motor Co. 88
Mexican Mfg. Co. 86
Meyers, A. J. 85
Mezgar, C. A. 53-82
Michelin Tire, American Agency 66
Miller, Charles E. 79
Miller Signal Co. 86
Milwaukee Steel Foundry Co. 87
Mitchell Motor Co. 40
Modine Automobile Co. 70
Morgan & Wright ..... Cover
Mosler, A. B., Co. 82
Motor Age 82
Motor Car Equipment Co. 68
Motor Car Specialty Co. 87
Motor Car Supply Co. 86
Mots Clincher Tire & Rubber Co. 77
Mutty, L. J., Co. 86
National Motor Vehicle Co. 75
National Spring & Wire Co. 85
Neustadt Auto & Supply Co. 85
Never-Miss Spark Plug Co. 86
Newmastic Tire Co. 85
N. Y. & N. J. Lubricant Co. 87
Nordyke & Marmon 72
Nyberg Automobile Co. 91
Olds Motor Works 61
Oliver Mfg. Co. 87
Packard Electric Co. 92
Packard Motor Car Co. ..... Cover
Pardee & Ullman Co. 88
Pederson, J. T. 89
Peerless Motor Car Co. 41
Pennsylvania Rubber Co. 65
Pierce, Geo. N., Co. ..... Cover
Pittsburg Reduction Co. 89
Pope Mfg. Co. 71
Prest-O-Lite Co. 76
Pullman Automobile Co. 88
Quaker City Automobile Co. ..
Railway Appliance Co. ....
Rainier Co. ....
Riley, Wm. B., & Co. ....
Robert Instrument Co. ....
Rose Mfg. Co. ....
Royal Motor Car Co. ....
Rubay, Leon ....
Rubber Goods Repair Co. ....
Rushmore Dynamo Works ....
Scandinavian Fur & Leather Co. ....
Shawver & Co. ....
Skinner & Skinner ....
Springfield Metal Body Co. ..
Standard Roller Bearing Co. ..
Stanley, John T. ....
Steel Ball Co. ....
Stevens, J., Arms & Tool Co. ..
Stolp Mfg. Co. ....
Streit, A., Machine Co. ....
Supplementary Spiral Spring Co. ....
Synnevedt Machine Co. ....
Syracuse Aluminum & Bronze Co. ....
Thomas, E. R., Motor Co. ....
Thompson, Charles A., Co. ..
Trebert Gas Engine Co. ....
United States Apto. Co. ....
U. S. Jack Co. ....
Veeder Mfg. Co. ....
Vesta Accumulator Co. ....
Walworth Mfg. Co. ....
Warner Instrument Co. 76-
Wayne Automobile Co. ....
Weber, O. F., & Co. ....
Weed Chain Tire Grip Co. ..
Welch Motor Car Co. ....
Western Tool Works ....
Weston Electric Instrument Co. ....
Wheeler, F. H. ....
White Sewing Machine Co. ..
Whitlock Coil Pipe Co. ....
Whitney Mfg. Co. ....
Willard Storage Battery Co. ..
Willis, E. J., Co. ....
Winkley Co. ....
Winton Motor Carriage Co. ..
Witherbee Igniter Co. ....
Worthington Automobile Co. ..

Digitized by Google

MOTOR AGE

VOL. VIII NO. 16 CHICAGO, OCTOBER 19, 1905 $2.00 Per Year

HEMERY CAPTURES VANDERBILT CUP

Lancia Does Remarkable Driving and Loses Race Only By Slight Accident – America's Good Showing

HEMERY

HEATH

1—A. Hemery in Darracq. Time: 4:36:08

2—Geo. Heath in Panhard. Time: 4:39:40

3 Joseph Tracy in Locomobile. Time: 4:58:26

4—V. Lancia, in a Fiat. Time: 5:00:31

SCENE AT THE START, WITH LANCIA READY TO LEAVE

NEW YORK, Oct. 14—La Belle France won the Vanderbilt cup. Uncle Sam was second, and what do you think of that! Classic Italy, with victory within her grasp, fell by the wayside, a victim to one of those strokes of ill-furtune that seem inseparable from the gamble of these contests, but pluckily persevered and finished third. The Vaterland was fourth and a bad fourth at that, let it be understood.

The American cup of automobiling will remain in France another year. In probably the all-around fastest and most fiercely fought fight of the whole series of international motor car road races, Hemery and the Darracq evolved today as the winner of the trophy young W. K. Vanderbilt put up for the first time last year for the encouragement of the American sport and industry.

JOSEPH TRACY

Great as was the driving of Hemery and Heath, and speedy and reliable as the Darracq and the Panhard proved, France's victory was not as clean cut nor was her road racing supremacy so indisputably proved as it was for the time being, when her riders finished first and second in the Vanderbilt and Bennett contests of last year and in the race over the Auvergne circuit in July.

There is a might-have-been to cloud the brilliancy of France's achievement, with an element of good luck that came from the ill luck of an opponent, who was showing her and her cars a clean pair of heels and seemed likely to prove a runaway winner, until an unlucky collision put the best driver and the fastest automobile out of the race, at least for first place.

Lancia, of the Italian team, who had led Heath, of the French quintet by 11 minutes 7 seconds at the close of the seventh lap, just as he had led Thery, the Bennett winner, in this year's contest, when an unlucky collision with Christie befel him and robbed him of all chance of

VINCENZO LANCIA

Digitized by Google

HEMERY EXPRESSES COMPLETE SATISFACTION BY HAND AND MOUTH AT OUTCOME OF THE RACE

first place. Up to the fatal eighth lap the Fiat driver had covered 198.1 miles at a rate of 70 miles an hour and gave an exhibition of long distance speeding, the like of which we Americans never before saw at home and Europeans had been only once before shown abroad; that, too, by the same Italian. But these collisions and the avoidance thereof are a part of the racing game, so it would be unfair to call France's victory mere luck. Justice and history, however, demand a mention of the incident and a qualification of the winner's triumph.

The victory of France, Hemery and the Darracq recorded, let us get quickly to cold facts and summarize the results. The finish in order was France, America, Italy, Germany. The Fatherland was a bad last. She was not numbered among those who completed the race and captured the first four places.

Heath, an American, of Parisian residence, last year's Vanderbilt winner, was runner up. Joe Tracy, who tried for the Bennett and failed and rode in the American trials and succeeded, was third. Lancia, despite his accident, finished the 10 laps and captured fourth.

In laps completed, an important factor of this sort of racing, in which even survivorship is an honor, France also led with 39 and an average of 7⅘. At this sort of reckoning Italy was second, with 35 and an average of 7. Uncle Sam scored 26 with an average of 5⅕, Germany's four-fifths of a full team bringing up the rear with a total of 17 and an average of 4⅘.

Hemery's average was 61.53 miles to the hour and 58.5 minutes to the mile; Heath's, 60.70 miles and 59.3 minutes; Tracy's, 57.07 miles and 57.07 minutes, and Lancia's, inclusive of his delay by his accident, was 56.7 miles and 63.7 minutes.

By way of comparison with the other great road races of the year, it is to be noted that Raggio won the Florio cup with an average of 64.8 miles; Hemery, the Ardennes circuit, 62.34; Dingley, the American trial, 56.22, and Thery, the Bennett, 47.63. Heath's average last year was 52.4 miles.

The fastest laps scored by the teams were: Lancia, Italian, 23.18; Sisz, French, 24.16; Jenatzy, German, 24.23; Tracy, American, 27.40. The fastest lap in last year's contest was 24.04, scored by Tarte, of the French team.

Immediately following the race, a protest and counter protest, both in writing, were submitted to Referee Vanderbilt and Chairman Morrell. The initial one was made by a representative of the Panhard against Hemery's Darracq. The claim was that it was shod with tires which were made in England, French Dunlops being the tubes in question. The Darracq representative, Mr. Rawlinson, was evidently prepared for such a protest, for he was abundantly supplied with affidavits, setting forth that the Dunlop company had recently established a factory in France and that the tires used by Hemery were made there.

Following the presentation of these affidavits Mr. Rawlinson protested Heath's Panhard, on the ground that its magneto was made in Germany. Later better counsels prevailed and both protests were withdrawn, leaving Hemery's title to the cup clear.

In the success of the Locomobile as a racing car, A. L. Riker as a designer and Joe Tracy as a driver, America won a triumph. To be candid, it was unexpected. With America's ill-luck in her previous efforts at international racing and the din of the beating of the European tom-toms that marked the fortnight before the race Uncle Sam had been forced into the background in auto race calculations. Few had the courage to hint at possible success. Few hardly dared to hope for it, though there was no earthly reason why the speed of an American car, the skill of an American driver and the fortune of a game with so much of luck to it should not justify the prophets in figuring in the Yankees in the calculation. Tracy had a fast, reliable car, which he drove with judgment and skill. Had he mingled less of caution—which was only natural—with it he might have won a place even higher up in the line. Anyhow, it was proved that America could produce a car, a designer, a set of tires and a driver well fit to cope with Europe's best, and Europe now realizes this.

Another international race on Long Island next year is a certainty. If France does not see fit to or cannot under local conditions or the possible demands for a Bennett cup race, run the Vanderbilt on her soil next year, she must return the cup to the commission to be competed for in the country which won second place in the contest and donated the cup besides. If the Vanderbilt race be run abroad, those high up in A. A. A. counsels say that a new international cup will be put up to be run perpetually on American soil.

To Chairman Morrell, who has worked unselfishly for 2 months in his cheerful, business-like way, belongs the chief credit of the race being run at all and being run so well. His unfailing diplomacy, abundant good humor, inexhaustible resourcefulness and untiring hustle secured the permit of the Long Islanders for the race to be run, won the farmers to the side of the automobilists, dispelled all the obstacles as they arose day by day, laid out the perfect system for the safety of drivers and spectators and the information of the public, and resulted in one of the best managed contests in the history of international road racing.

RECORD CROWD SEES RACE

America had a new sport record set for her today and the automobile did it. There have been Queen's cup yacht racers viewed by the living freight of 500 yachts and excursion boats. There have been great handicaps at the running tracks, championship ball games on the diamond and intercollegiate football contests on the gridiron, which have each attracted perhaps as high as 40,000 spectators. It was for the Vanderbilt cup race to draw a throng that must be estimated not by tens but hundreds of thousands. No one can more than guess at the numerical magnitude of the mighty concourse that

A FLAGMAN

A Bugler

grouped and crowded itself around the international automobile racing arena today. The double line encircling the entire 28 mile racing circuit practically without a break. It was jammed six or eight or ten deep along a ½ mile of start and 2 furlongs of homestretch. The Jericho, East Norwich, Bull's Head, Lakeville and new Hyde Park corners contributed thousands and the Guinea woods turn, the "S" at Albertson and the hairpin near by to Lake Success had hundreds of horror-seekers looking for trouble at these danger spots. Below these points the human avenue was almost unbroken, so that the racers chased through a lane of people the entire distance. Besides this, it must be remembered that but a part of the viewing crowd was afoot.

Behind them was another mighty throng. The official stand and the speculators' stands in its neighborhood held at least 5,000. There were scores, perhaps 100 other stands, erected in addition in the towns along the course. Between and behind the line of standing spectators were automobiles parked at every entering road, in every field and on every spot where squatting space could be seized or resting place hired by the curious.

Such was the amphitheater in which the gladiators of the motor fought out the battle of the speed and endurance of the thunderbolts of steel and the courage and skill of the great drivers of racing cars, drivers of the fastest and stoutest racing cars of four nations. How many spectators this open-air arena held is after all but a guess. That the world's attendance record at a sporting event was badly broken there can be no dispute. This contest, be it remembered, was waged on a course within an hour's ride of one of the great cities of the world, having a population of 3,000,000 itself and a million more at its very gates, which covered 28 miles of racing road.

Automobiledom was most conspicuous in the throng and the color of the picture was furnished, of course, by the motor cars, and furnished its thousands of followers, but the tens of thousands came from the people at large, to whom the attraction of the race was its internationality in part but more its stirring novelty, the marvelous speed flights it furnished and the danger of disaster to life and limb that hung above it. They say that Greater New York and nearby New Jersey have 10,000 automobiles. Whatever the metropolitan motor car census may be, it was all on hand to be counted, helped out by hundreds of cars that had been driven to the course for the occasion from even so far west as Chicago; for during the past fortnight Long Island has been the Mecca of tourists from the entire country east of the Mississippi river.

All the week the motor cars had been gathering in New York and many had been seeking storage at the improvised roadside garages, in the sheds of the inns and in the barns of the farmers. The final rush, however, began on Friday afternoon. From that time until close to the hour set for the start there had been an undiminished line of cars 2 or 3 blocks long awaiting their turn to cross the ferry at Thirty-fourth stret. Hundreds sought the course beside by the two East river bridges. During the 4 hours following midnight this morning, however, the rush was the greatest. There had been ante-daylight breakfasts served at all the uptown hotels, but the majority had been making a night of it with more attention to the cafe than to the restaurant.

When these race-going streams of automobiles reached the common channel of Hoffman boulevard, Hillside avenue and the Jericho pike they formed a crowded, unbroken torchlight procession, with the illumination feature thrice magnificent because of the brilliancy of headlights and the dazzle of gas lamps. The marching tune was the chug of the motors and the yelp of the horns. So much for the motor car contingent of the crowd.

There was another contingent of race-goers from the city who went for the spectacle's sake, to gratify their sporting proclivities, to be present because a big event was on hand, or to be there to see a great international struggle, which was sure to develop wonders of speed and perhaps horrors of disaster. The trolley lines leading to the ferries and bridges were jammed with them from midnight on. They were to reach the course by the trains of the Long Island Railroad from Hunter's Point and Flatbush. There were trains scheduled to leave for Mineola at 3:35 and 5 o'clock and for Garden City at 4 o'clock. The engines pulled fifteen cars each and seats, aisles and platforms were jammed. A big suburban population of city business men is on Long Island. To a man each had taken a holiday for the day and to a boy there had been a dead grandmother or a sick sister in every family. All this vast throng headed courseward with the rest before daylight.

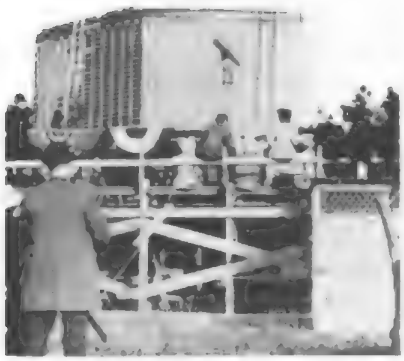
The farming population of Nassau county had forgotten for a week carrots, cabbages and celery. There was more money in

DETAILS OF CARS IN THE VANDERBILT CUP RACE

Car Number	Driver and Country	Owner	Power and Car Where Made	Ignition	Transmission and Speeds	Bore and Stroke	Wheelbase Tread	Tires	Mechanic	Weight
1	Jomatzy Germany	Robert Graves	120 Mercedes Unter-Turckheim	Low Tension Magneto	Double Chain 4	185x150 mm	11'x54	Continental	Bariz	2372
2	Duray France	DeDietrich Co	130 DeDietrich Luneville	Low Tension Magneto	Double Chain 4	190x150 mm	112x53	French Michelin	Frankville	2300
3	Dingley America	A. L. Pope	50 Pope-Toledo Toledo, O.	Battery Jump Spark	Double Chain 2	6x6 in.	100x54	Diamond	Nichols	2700
4	Lancia Italy	Hollander & Tangeman	110 Fiat Turin	Magneto Make & Break	Double Chain 4	180x180 mm	112x56	Italian Michelin	Alessi	2482
5	Keene Germany	Foxhall P. Keene	120 Mercedes Unter-Turckheim	Magneto	Double Chain 4	168x145 mm	107x54	Continental	Luttgen	2304
6	Wagner France	Darracq & Co.	90 Darracq Suresnes	High Tension Magneto	Shaft 3	6x6 in	100x54	French Dunlop	Rodiet	3724
7	Tracy America	H. H. Thomas	30 Locomobile Bridgeport, Ct.	Low Tension Magneto	Double Chain 3	5¼x5¼ in	100x54	Diamond	Poole	
8	Nazzarri Italy	Hollander & Tangeman	110 Fiat, Turin	Magneto Make & Break	Double Chain 4	180x180 mm	110x56	Italian Michelin	Fornaroni	2482
9	Warden Germany	John H. Warden	120 Mercedes Unter-Turckheim	Low Tension Magneto	Double Chain 4	185x150 mm	115x54	Continental	Oestreicher	2234
10	Szisz France	Renault Bros.	70 Renault Billancourt	High Tension Magneto	Shaft 3	170x160 mm	112x50	French Michelin	Dimitrievitch	2302
11	Christie America	James L. Breese	90 Christie New York City	Battery Jump Spark	Direct Axle 2	6¼x6¾ in	90x70	Diamond	Selvar	2024
12	Cedrino Italy	Hollander & Tangeman	110 Fiat, Turin	Magneto Make & Break	Double Chain 4	165x185 mm	110x56	Italian Michelin	Siefert	2240
13	Campbell Germany	Samuel H. Stevens	120 Mercedes Unter-Turckheim	Low Tension Magneto	Double Chain 4	185x150 mm	115x54	Continental		2219
14	Heath France	Panhard & Levassor	30 Panhard Paris,	Magneto	Shaft 3	6½x6 in	110x54	French Michelin	Goubert	2219
15	Lytle America	Albert A. Pope	75 Pope-Toledo Toledo, O.	Battery Jump Spark	Double Chain 3	6x6 in	104x56	Diamond	Tattersall	2310
16	Chevrolet Italy	C. J. S. Miller	110 Fiat, Turin	Magneto Make & Break	Double Chain 4	165x165 mm	110x56	Italian Michelin	Scheitling	2304
18	Hemery France	Darracq & Co.	80 Darracq Suresnes	High Tension Magneto	Shaft 4	6x6 in	106x53	French Dunlop		3000
19	White America	Robin T. White	40 White Steamer Cleveland, O.		Shaft 2			Diamond	Huntak	2180
20	Sartori Italy	Alfred G. Vanderbilt	90 Fiat, Turin, It.	Magneto Make & Break	Double Chain 3	165x185 mm	110x56	Italian Michelin	Letrini	2192

All cars had four cylinder in 4 ors except Lytle's and White's, which were six and two respectively. Keene, Warden, Christie, Heath and White are amateurs; the others professionals.

Digitized by Google



THE IMMENSE SCORE BOARD

letting cots at $5 and leasing parking space in cornfields at $20 or selling sandwiches, coffee, cider or milk by the roadside than in truck farming. The adults not busy hustling for the nickel, the dime, the dollar or the yellowback had made a night of it in the roadside taverns, or hitched up their Sunday buggies or everyday truck wagons and filled them with wives, daughters and relatives and sought early advantageous view places along the road. The small boys and the girls at home perched on the fences or made grand stands out of porches and farm wagons. Nassau county now thinks automobile racing all right and vigilance committees are now ready to visit vengeance should any miscreant throw nails or broken bottles along the course. Should there be no race next year Nassau county will go into mourning and have as big a grudge against the automobilists for staying away as they originally had for their coming. MOTOR AGE last week thought the race would bring a half a million dollars into the county. In view of last night's crowding of inns and farm houses with lodgers at $5 per, fields with cars at any old price and stomachs with all the cows, the gardens and the kitchens of the county could yield, and its tavern bars pour out, it begs to raise its guess to a million.

NIGHT BEFORE THE RACE

The night before the race was a night to be remembered. Over at the Garden City hotel, whose normal capacity is probably 300, there were surely treble that number accommodated; the rooms were jammed with cots and even the floor of the billiard room was pre-empted for mattresses for sleepers. In the writer's room, built for two, there were two double and two single beds and a cot in the bath room besides. In one room four women slept in one bed. There were 100 more at least who came for rooms only to get a polite smile at the desk and sat up all night in the foyer or on the porch or helped to make night hideous in the cafe. Part of the enclosed veranda was pressed into service as an emergency dining room. At the long tables one encountered tradesmen from all over the country. It was a gathering of all Yankee automobiledom. One might have thought that the hotel people had been given a contract to house all the exhibitors and attendants of a national motor car show.

There were the same crowding and the same setters up, only worse, over at Krug's near the stand and at all the hostelries along the course. Mine hosts had also leased rooms in neighboring farm houses and still there was not room.

So much for indoors. Open air camping out was universal along the course. Owners either sought squatting plans for their cars during the night and slept in them as best they could, or left their chauffeurs to keep their places and sought near by barrooms for all night entertainment.

Sleep? Nonsense! Who could sleep or who cared to sleep if he could, with so much to think of and talk of with such a momentous event but 3 or 4 hours off. By 3 o'clock the waiting throng at the Garden City hotel and in all the taverns and farm houses in the county began to hustle itself. Four o'clock breakfast was the rule. A half an hour later everybody was en route to the course.

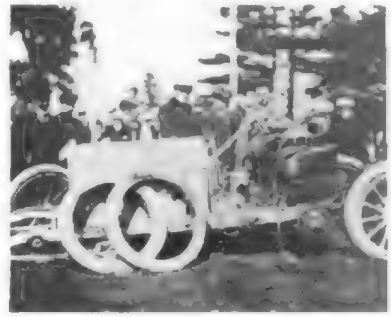
It was a beautiful, almost balmy night—remember, sun-up time was still almost an hour away. Glorious moonlight illumined the scene. And what a scene it was in the neighborhood of the grand stand. The road was jammed with honk-honking, blazing automobiles, overloaded wagons and swarming foot passengers. Already the mile wire barrier was lined five deep. Behind stands were filling up and cars were crowding into place.

"Parking spaces here! Seats to see the race! Get your breakfast now! Only official programme of the race! Get out of the way! Look out, there!" could be distinguished in the combined roar of the crowd struggling a-foot, a-motor and a-wagon. Up and down the road were lights, lights, lights.

It was a riot of confusion worse confounded, made worse still by the babel of many shouting tongues of accents that smacked almost as often of Rome, Berlin and Paris as of Chicago and New York, and the start of the race was now but ½ hour away. Everyone was determined to see all that was going on a despite its eagerness not to miss anythi the crowd was a most orderly one, althoug somewhat hard for the deputies to hand

LINEUP FOR START

Lancia, red-shirted and helmete pushed his giant Fiat through the crow toward the tape. He was the first to a rive. His coming seemed to wake up t officials to the realization that somethi must be doing at once. Referee Vand Lilt was first on hand. Chairman Morr was there, too. A word of conference w young Willie K. and Bobby set his hundr picked, broad-shouldered deputies to wo In a jiffy cars and wagons were turn back and the crowd was hustled scrambli behind the ropes. Word was phoned close the course. The distant road clear into a long, open lane through the waiti thousands. Near by the jam of people a vehicles had given way to the fast gath ing racing cars. Each was promptly giv



CHEVROLET'S CAR AFTER ITS ACCIDENT

his place in the double line with the number to the right and the even to left, though it was arranged and carr out that each car should move up and st from the center of the road.

Long before this, though, the doub decked press stand on the north side the course had filled and so had the tion of it devoted to the judges, tim and telephone officials. Each of the lat twelve in number, sat with his receiver his ear, his line being connected with phone station at the seven turns and timing stations at 5-mile intervals. hind the 200 seats for the reporters w twelve more telephones for their use. dozen district messenger boys were hand to carry news copy to the telegr office at Mineola, a ½ mile away, the tract of the Western Union not permitt a telegraph station to be set up anywh except at a railroad station.

By this time the 124 boxes, forty hu ing spaces and 250 original and 120 ad seats of the grand stand were rapidly ing. Their occupants were about ev divided between the social register, millionaire automobile contingent and leading motor car manufacturers and porters. Of course, fashion was robe its finest furs, o'er topped by its choi headgear confections and inlaid with latest realizations of autumn fashion pl to be displayed later in the day, when warming sun should permit the lay aside of wraps. Young Mrs. Willie was, of course, the cynosure of wom eyes, and the Duchess of Marlborough,

THE RESULT SEEN AT A GLANCE

Finish	Driver	Car	Completed	Total Time	Fastest lap and time
1	Hemery	Darracq	10	4:36:08	(7) 25:24
2	Heath	Panhard	10	4:39:40	(5) 26:30
3	Tracy	Locomobile	10	4:58:26	(5) 27:40
4	Lancia	Fiat	10	5:00:31	(4) 23:18
5	Sisz	Darracq	9	4:34:07	(2) 24:19
6	Nazarri	Fiat	9	4:51:07	(4) 24:35
7	Sartori	Fiat	8	4:34:40	(4) 25:23
8	Warsten	Mercedes	8	4:51:23	(4) 27:15
9	Duray	De Dietrich	7	5:35:55	(5) 25:29
10	Chevrolet	Fiat	6	3:09:25	(2) 28:15
11	Keene	Mercedes	5	2:20:33	(5) 26:23
12	Dingley	Pope-Toledo	5	4:57:20	(2) 31:11
13	White	White	4	3:09:14	(3) 42:31
14	Lytle	Pope-Toledo	4	3:15:52	(1) 29:15
15	Jenatzy	Mercedes	3	1:22:06	(2) 24:33
16	Wagner	Darracq	3	1:30:38	(2) 24:53
17	Christie	Christie	3	2:44:13	(1) 29:33
18	Cedrino	Fiat	2	53:54	(1) 25:36
19	Campbell	Mercedes	1	28:21	(1) 28:21

Digitized by Google

objective points of curious eyes not engrossed by the racers and the race. Behind the stand the A. C. A. had prepared a tent for breakfast and luncheon and another for the reception of women.

The grand stand was by no means an altogether bare board affair; for Chairman Morrell had seen to it that its front was draped with the colors of the four contesting countries.

It was around the racing cars now in line, however, that interest centered. Each was the center of groups of partisans and compatriots. In four tongues echoed the babel of expert advice, cheering encouragement and woman's kindly ministrations. There were suggestions, warnings, entreaties and kisses au revoir and perhaps good bye. There was something of solemnity in the final greetings, which to some extent extended to the attitude of the onlookers. There was a realization that death might come to some friend or a fatality be the outcome of a contest without dispute one rife with possibilities of mortal disaster. That death is a contingency is perhaps as great a factor toward the thrill of these races as the uncanny aspect of the racers and their pilots and the marvelous speed flights of the cars themselves.

Now the man in the moon turned off his light and the dawn, first gray, then rosy came. Phoebus gathered up the reins of his steeds for his daily race across the heavens. It was the eve of day—bright, glorious and full of promise of Indian summer balm. The racers were all lined

Tire Repair on the White

up, their drivers nervous, no doubt, but eager to have the contest on and the suspense ended. Wag, attired in an entire suit of russet leather—cap, jacket, knickerbockers and leggins in honor of the crowning moment of his career as official starter—stood mumbling for the thousandth time his newly learned and incessantly rehearsed starting count in French, which was to send off the foreigners. The spectators, no less nervous as those who wait the "play" of the umpire, the kick-off of the ball, or the "go" of the referee in some great combat of the diamond, the gridiron or the river, were on the qui vive for the long expected race to be on.

Jack Kerrison, of the Chronograph Club of Boston, took his stand at the head of the line, watch in hand, with Wag looking over his shoulder. Vanderbilt, Morrell, Hollander and de Turckheim flattened themselves against the stand. Down the road a long line of red flags waved.

"Dese, nuf, weat, sel, siezo, sank, cattre,

BIG ROAD RACES AND THEIR RESULTS

Race	Course	Miles	Winner	Car	Time	Av. per h.
Florio, 1905	Brescia	311.12	Raggio	Itala	4:46:47	64.8
Vanderbilt, 1904	Long Island	284.4	Heath	Panhard	5:26:45	52.4
Ardennes, 1905	Ardennes	372.8	Hemery	Darracq	5:58:32⅗	62.34
Auvergne, 1905	Auvergne	341.4	Thery	Richard Brasier	7:02:42	48.50
Vanderbilt Elim	Long Island	113.2	Dingley	Pope-Toledo	2:00:50	56.22
Vanderbilt, 1905	Long Island	283	Hemery	Darracq	4:36:08	62

traw, de, partay," said Wag without a slip, pumping his hand with each count. A crunch of the clutch, a puff of fire belched from the exhaust and the great race was on.

In 18 minutes all were away but Christie, his pursuer being sent off 2 minutes behind him as per schedule. There was a hasty inquiry for the reason of his absence. There was no time for more, for who could tell how fast was to be that first mad lap and how soon the leader would loom up into sight?

"Car coming!" bawled Prunty through the megaphone.

There was a quick craning of necks up the road. Was it Jenatzy? Was it Duray? Was it Dingley? Was it Lancia?

An approaching roar, a z-z-z-zip and a motor—driven thunderbolt manned by two uncanny demons, shot by. There was but time to catch No. 1 as it shot by and was lost down the human lane. It was Jenatzy.

"Car coming!"

R-z-z-z-z-z-zip.

It was Lancia. He had eaten up in one short round the minute intervals that separated him from Dingley just ahead and Duray just beyond and was off in mad pursuit of the flying Dutchman, Jenatzy, who happens to be a Belgian.

The twelve telephones with Prunty's megaphone told the story of the day, the progress of the racers, the rumors of their disasters, the tales of their misfortunes. There was no let up in the interest. At intervals not greater than 2 minutes on the average the cars flashed by. But all the time Prunty's clarion voice bellowed through the pasteboard funnel the story of the race and the chalk artist put the figures of the completed laps in elapsed times on the two great bulletin boards on top of the press stand.

There was no flagging of interest, no leaving of seats. From start to finish the eyes and ears of the spectators were fixed on the race. There were cheers for favorites, groans at bulletins of collisions, and hand clappings at stories of disasters panning out more bruises and broken cars.

There were crucial moments at the stand. Lytle had lost his mechanic. Was he killed? Keene had crashed into a telegraph pole. Was he injured? Lancia and Christie had collided? Which was killed? Was Lancia out of the race? No, he was not. He had started again. A cheer. But he was too far behind to make up lost time? He surely was. What a shame that he who had ridden so well and so well earned the cup should be robbed of it by an accident.

But who will win now? Will it be the handsome American, Heath, or the dashing Parisian, Hemery? Nine laps and Heath is at the very heels of Hemery, but 7 seconds away. But stop. Hemery has started 3 minutes back of Heath. He must beat him more than that at the finish to win.

There is an anxious, eager wait—broken broken only by Lancia madly rushing by in his fruitless chase. Then "Car coming" breaks the suspense. In an instant a car flashes by. It is No. 18. It is Hemery. France has won—and there is a bedlam of Gallic cheers and hospitable American applause as the Darracq driver slows down a bit further and takes in an official to escort him to the weighing stand.

There has been hardly time for cheers, though, for 100 yards behind him flashes another car.

"It is Heath!"

It wasn't. It was Sartori winding up his eighth lap. A few seconds more and it was Heath indeed.

A long wait and Joe Tracy flashed by in the Locomobile—the first American driver and car to finish a cup race and win a leading place in it.

"Well done, Joe!" and then a good Yankee cheer and then a rush to shake Riker by the hand.

Next came Lancia. He slowed down and rode slowly up to and across the tape and then stopped. He got the great reception he deserved. Again had the hand of fate robbed the gallant Italian of a victory within his grasp just as it had in the Bennett race 3 months before. He gesticulated wildly. They say he was not lodging a protest, but only telling in his impetuous way how it all had happened.

Spectators broke through the lines and rushed toward him. Yellow flags waved frantically. At a word from the referee the telephones told the people at all the turns and timing stations that the race was off and that the others had stopped.

For a second time today the highway

Telephone Station at Grand Stand

Digitized by Google

teemed with people, wagons and automobiles. An hour later farm wagons again trundled over the road and Nassau county entered again upon the humdrum of its normal existence.

When the race was called off Sisz, Nazarri, Sartori, Dingley, Warden, Duray and White were still running, Dingley with three cylinders, the fourth having been plugged as an emergency repair—seven in all, in addition to the four finishers.

Of the derelicts Jenatzy was laid up at Bull's Head with a cracked cylinder, Keene had crashed into a telegraph pole, Christie had collided with Lancia, Wagner had had tire and engine troubles galore, Cedrino had skidded into a pole and bent an axle. Campbell was stranded with a leaky gasoline tank, Lytle had had a lot of tire trouble and cracked chain and steering gear in a mix up with a dog and Chevrolet's front axle was down and out.

FIGURES TELLING OF THE RUNNING OF THE CUP

Driver	Start	First Round 20.3 Miles: Elapsed	First Round: Miles per Hour Elapsed	First Round: Position	Second Round 58.8 Miles: Total Elapsed	Second Round: Miles per Hour Total Elapsed	Second Round: Elapsed Second Round	Second Round: Miles per Hour Second Round	Second Round: Position	Third Round 84.9 Miles: Total Elapsed	Third Round: Miles per Hour Total Elapsed	Third Round: Elapsed Third Round	Third Round: Miles per Hour Third Round	Third Round: Position	Fourth Round 113.2 Miles: Total Elapsed	Fourth Round: Miles per Hour Total Elapsed	Fourth Round: Elapsed Fourth Round	Fourth Round: Miles per Hour Fourth Round	Fourth Round: Position	Fifth 141.5: Total Elapsed	Fifth 141.5: Miles Per Hour	Fifth 141.5: Total Elapsed
1 Jenatzy	6:00	24:02	60.68	2	49:25	68.72	24:53	49.10	3	1:22:30	61.92	32:41	51.56	6	Cracked cylinder head rushing the Bull							
2 Duray	6:03	25:28	64.23	7	56:17	61.84	30:51	58.26	11	1:31:55	62.16	25:03	60.17	8	2:07:48	63.18	45:37	37.37	10	2:33:12	56.4	
3 Dingley	6:05	23:44	57.10	17	60:57	55.74	31:11	54.15	14	1:34:28	22.90	2:41:43	10.45	17	4:21:05	25.96	2:00:22	43.50	14	4:57:10	28.5	
4 Lancia	6:08	23:06	71.25	1	47:30	71.04	24:24	72.23	1	1:10:45	72.10	23:15	72.51	1	1:34:10	72.21	23:18	72.54	1	1:57:28	72.5	
5 Keene	6:09	27:33	62.05	9	54:56	62.42	27:23	62.57	7	1:23:19	61.31	28:23	59.41	10	1:54:10	59.45	31:05	54.53	9	2:20:03	60.6	
6 Wagner	6:06	25:16	68.11	4	49:40	68.17	24:53	68.22	4	1:20:36	64.20	30:20	49.49	4	Tire and engine troubles—retired.							
7 Tracy	6:07	26:14	60.14	10	56:51	59.32	30:37	58.26	12	1:26:27	59.51	29:36	59.37	12	1:57:38	57.73	32:11	54.45	7	2:25:18	58.4	
8 Nazarri	6:05	25:29	66.72	5	1:10:42	48.18	58:14	33.26	16	1:44:17	48.54	35:35	46.37	13	2:36:52	52.70	34:35	49.07	11	2:33:26	57.9	
D Warden	6:10	27:41	61.38	c 9 d 10	55:07	63.61	27:26	61.26	6	1:22:33	61.28	27:23	62.00	5	1:49:45	61.88	27:15	62.21	4	2:16:46	60.2	
10 Sisz	6:00	24:20	66.14	3	49:24	68.74	24:19	69.02	2	1:14:47	68.14	25:21	66.98	2	1:38:27	69.05	23:42	63.97	3	2:02:45	59.1	
11 Christie	6:20	26:50	29.25	19	1:20:20	38.44	53:32	56.22	18	2:44:33	31.02	1:15:53	23.37	18	Engine, ignition and tire troubles							
12 Cedrino	6:11	25:20	65.32	6	54:54	63.00	29:39	60.0	b	Struck telegraph pole at Lakeville, third round and retired.												
X Campbell	6:12	26:21	59.20	13	Leak in gasoline tank—retired.																	
14 Heath	6:13	26:32	60.57	11	55:46	61.06	27:31	62.57	8	1:21:56	62.17	26:50	63.22	4	1:48:51	62.24	26:55	63.08	2	2:15:21	62.7	
15 Lytle	6:14	29:35	58.30	18	2:00:17	29.28	1:31:02	18.36	18	2:35:48	32.39	35:12	40.23	16	3:15:52	33.92	40:03	42.29	13	Chain trou		
16 Chevrolet	6:15	26:42	59.36	15	56:57	59.03	30:15	60.07	13	1:26:32	57.55	31:35	50.76	11	1:57:25	58.00	30:53	63.05	6	2:28:41	59.5	
18 Hemery	6:16	26:25	59.32	14	54:24	62.61	28:01	65.25	c	1:20:20	63.41	25:56	65.47	3	1:50:20	57.25	30:18	44.35	5	2:23:27	59.1	
19 White	6:17	51:51	23.56	16	1:36:29	35.25	44.32	27.91	17	2:18:04	36.95	42.21	30.52	14	3:20:14	35.28	50.25	34.71	12	Tire troub		
20 Sartori	6:18	27:41	61.38	c 9 d 10	55:11	61.54	27.53	61.54	15	1:22.23	61.87	27:10	62.50	7	1:49:45	61.88	27:22	66.96	1	2:21:06	60.1	

a Fastest lap in race. b Christie collid

There was no actual confusion, but the nervous tension everywhere was higher and the crowd on hand was a great deal bigger than 12 months ago.

Just on the second of 6 o'clock Jenatzy got the word to go and he got his car under way in a fashion that made it seem like a thing alive. Sixty seconds later Duray made about as good a start. Dingley and his assistant, dressed in khaki this time instead of black leather, came to the tape, literally smiling. There was no nervousness in that car and it got away well. So it went, at 1 minute intervals, car after car being dispatched without a mishap. Every car belched forth the smoke of burning lubricants and most of them made a good getaway. Foxhall Keene, wearing a gray overcoat, such as he might in a touring car, got away in fine style. Wagner, in his Darrneq, was a trifle slow. Joe Tracy, with a big orange-hued kerchief found about his neck, did well. Nazarri immediately after starting removed both hands from the wheel and waved them, as to friends. Warden could not be seen through the smoke from his exhaust pipes. Sisz made rather a poor start. Christie was not on hand when his turn arrived and there was an interval of 2 minutes between Sisz and Cedrino.

Before Campbell, driving the Mercede on which S. B. Stevens has chosen to carr a cross instead of No. 13, had been started the reports of Jenatzy's progress began t be shouted through the megaphone. Firs he was reported from the 10-mile poin and next the 15-mile station. He covere the first 15 miles in a little less than 1 minutes. Campbell made a good start an so did Heath, the latter waving his han as he swept away. Lytle drove to th tape chewing gum and looking unconcerned. Chevrolet and Hemery got awa handily. Walter White caused amusemen by starting very slowly and putting hi hand on the emergency brake, whic caused catastrophe on September 23. Sartori was on time this year and got awa from the line in fine style at the word.

With nineteen cars running there was n dullness for the spectators. From 6:24:5 o'clock, when Jenatzy finished his firs round, the cars kept popping by with deafening rush at intervals of a minut or so, often only a few seconds apart

BATTLE BY ROUNDS

At 5 minutes before 6 o'clock Peter Prunty, announcer, tilted his megaphone at the assembled multitude and introduced a noisy cloud of yellow smoke that had just come to the tape as Jenatzy. The queer-looking Belgian may not have been nervous, but he talked in a very excited manner and gesticulated frantically all the while he waited for the word to go. Duray had his car lined up, just behind Jenatzy and he left it to shake hands with his rival. Vanderbilt and several others did the same and a big man who had no official badge of any sort broke from the ranks to wish the Mephistophelian-looking man good luck.

"I saw you win in Ireland!" he exclaimed as a sufficient justification for this action.

The excitement at the time of start was much greater than at the race of last year.

LANCIA SLIDES AROUND THE EAST NORWICH TURN

CHEVROLET ON THE DANGEROUS S TUR

SHOWING TIME BY ROUNDS AND MISHAPS OF ALSO RANS

Sixth Round 160.8 Miles — Seventh Round 184.1 Miles — Eighth Round 206.4 Miles — Ninth Round 230.7 Miles — Last Round 253 Miles

Total Elapsed / Miles per Hour	Total Elapsed	Elapsed Sixth Round	Miles per Hour Sixth Round	P. Without	Total Elapsed	Miles per Hour Total Elapsed	Elapsed Seventh Round	Miles per Hour Seventh Round	Position	Total Elapsed	Miles per Hour Total Elapsed	Elapsed Eighth Round	Miles per Hour Eighth Round	Position	Total Elapsed	Miles per Hour Total Elapsed	Elapsed Ninth Round	Miles per Hour Ninth Round	Position	Actually Total Time	Miles per Hour	Pit Stop Total Elapsed	Miles per Hour Last Round	Position	
on fourth round and retired																									15
2:30:27	51:34	26:15	64:08	0	3:35:55	35:28	2:58:28	10:35	9	Stone flew in gear box 4th round. used 4th speed. tire and engine trouble															9
Cracked cylinder on third round. then ran on three										had tire trouble fourth and fifth round. running at close of race.															12
2:25:51	49:39	23:45	71:40	1	3:16:32	50:40	2:52:32	70:03	1	4:30:39	56:33	1:11:37	162:02	6	6:25:49	57:04	2:55:10	70:25	3	6:30:31	56:51	35:22	86:05	4	
Struck telegraph pole on third round and retired.																									11
																									16
2:26:11	57:17	32:53	51:35	5	3:26:04	57:05	27:53	69:04	5	4:56:26	57:01	30:22	55:01	5	6:24:53	56:59	32:17	52:39	4	6:26:21	57:07	2:03	57:15	3	
2:26:44	55:35	28:07	65:01	6	3:24:40	56:26	24:07	66:50	6	4:51:39	56:21	27:01	66:54	3	6:21:47	52:48	29:47	49:28	6	Running at finish. had ignition trouble.					6
1:05:19	54:07	31:31	42:33	9	4:11:18	47:29	1:06:39	25:23	8	4:31:22	20:04	4:00	42:30	8	Tire trouble – running at finish.										8
2:26:00	57:07	33:24	50:31	4	3:34:06	54:04	28:07	59:31	4	4:50:41	56:12	26:35	57:1	4	6:21:57	55:58	31:21	55:59	5	Leak in radiator, tire and ignition troubles running at finish					5
Lancia on fourth round and retired.																									17
																									18
2:41:54	63:50	36:31	60:25	2	3:40:50	62:23	23:05	54:38	2	5:11:31	61:35	31:32	59:51	2	6:11:11	60:19	27:33	62:38	2	6:14:11	60:30	27:30	60:07		19
Lancia ran into ditch and injured steering gear.																									2
1:41:25	52:52	30:44	55:24	10	Broke front axle and set red																				14
2:38:26	60:40	35:20	60:53	3	3:41:30	61:05	25:24	61:52	3	5:30:30	61:25	25:30	60:21	1	6:36:36	61:18	28:34	53:11	1	6:36:36	61:51	27:45	61:55		10
third round.	Broke cylinder head. repaired and running at finish.																								1
																									13
3:02:38	55:38	41:32	30:36	7	3:36:27	50:25	33:49	31:55	7	4:34:40	49:45	30:13	44:31	7	Tire and ignition troubles sixth and seventh rounds. Running at finish.										7
on eighth round. also tire troubles.																									

Eleven cars had finished their first lap when Christie came rushing along and crossed the tape with a flying start. It was actually 6:38:35 o'clock when he started, but his official time was recorded as 6:10, which was when he should have gone.

The only delay reported on the first lap was one made by White at Bull's Head because of tire trouble. There was practically a tie in the second round also. Keene's time and Hemery's were the same except that ⅜ of a second was added to Keene's time when he passed the stand lapped on Sisz. It was interesting to note that Cedrino's time for this lap, 28:18, is at just the pace of a mile a minute. At the end of the second round Jenatzy again was first to pass the start, but Lancia followed him in 55 seconds and was shown to have a lead of 2 minutes 4½ seconds over Sisz, who was second. In this lap Wagner passed Duray while Sisz passed Nazarri, Dingley and Keene. The biggest jump in point of actual place was made by Hemery, who moved up from fourteenth place to sixth. Some thrills were afforded in this lap by Sisz coming past the grand stand almost dead abreast. Sisz had a yard or two the better of it and the timers separated them by ⅕ second. Not quite 4 minutes later Dingley came along, with Tracy only 100 yards behind. On this lap more tire troubles were reported on by White, Nazarri had a puncture, Lytle's mechanic was thrown out at a turn and Hemery nearly overturned in a ditch while making the double turn on Willis avenue. Campbell dropped out because of a broken tank. The round summarized as before and showing all changes, follows:

No. 1, Jenatzy, third; No. 4, Lancia, first; No. 6, Wagner, fourth; No. 2, Duray, eleventh; No. 10, Sisz, second; No. 5, Keene, seventh; No. 7, Tracy, twelfth; No. 3, Dingley, fourteenth; No. 9, Warden,

Even before the first round was finished, it began to look like Lancia's race. It was known that he had passed Dingley before reaching the S turn at Willis avenue, and that he had passed Duray before Lakeville was reached. There was a good cheer for him when he passed the stand less than 2 minutes after Jenatzy, and it was made known that he was leading by 1 minute and 3 seconds. Next to Lancia and Jenatzy, Sisz made the best showing in this round, coming around in eighth place and being third in point of time. Wagner moved up a place by passing Keene. Dingley was passed by Lancia, Wagner and Keene and Tracy was passed by Nazarri and Sisz. Heath and Lytle each moved up a place, Hemery moved up two places and so did Sartori. A hot pace was set from the beginning. Seventeen of the nineteen starters covered the first lap in less than 30 seconds. Twelve ran it in less than 30 minutes. Twelve ran it in less than a mile a minute.

A summary of the lap, giving the names of the drivers in the order of passing the grand stand follows, the first number, at the left of the name, being the official one and indicating the position in which the man started, while the figures at the right hand of the names tell the actual position in the race held by each because of the time he made:

No. 1, Jenatzy, second; No. 4, Lancia, first; No. 2, Duray, seventh; No. 6, Wagner, fourth; No. 5, Keene, eighth; No. 3, Dingley, seventeenth; No. 8, Nazarri, fifth; No. 10, Sisz, third; No. 7, Tracy, twelfth; No. 9, Warden, ninth; No. 12, Cedrino, sixth; No. X, Campbell, thirteenth; No. 14, Heath, eleventh; No. 15, Lytle, sixteenth; No. 16, Chevrolet, fifteenth; No. 18, Hemery, fourteenth; No. 20, Sartori, tenth; No. 11, Christie, nineteenth; No. 19, White, eighteenth.

On this lap there was a tie between Warden and Sartori for ninth place. Their elapsed time was the same, but for the sake of preserving the succession the place is given to Warden in the summary because of his prior order in passing the tape. It will be noted that the car on which Mr. Stevens preferred a cross to the number 13, finished thirteenth in this first lap and didn't come around any more.

LANCIA ON THE STRETCH AT THE FINISH

NAZARRI SKIDDING ON THE BULL'S HEAD TURN

Digitized by Google

SCENE AT THE START WHEN KEENE WAS SENT AWAY IN FIFTH POSITION

ninth; No. 12, Cedrino, fifth; No. 14, Heath, eighth; No. 18, Hemery, sixth; No. 16, Chevrolet, thirteenth; No. 20, Sartori, tenth, No. 8, Nazarri, fifteenth; No. 11, Christie, sixteenth; No. 19, White, seventeenth; No. 15, Lytle, eighteenth.

At the end of the third lap Lancia was first not only in point of time, but was also leading the whirling string of racers. He passed the stand nearly 9 minutes before Jenatzy appeared and the time pieces showed that he had a lead of just 4 minutes over Sisz, who was again second in the official time records. In this round Cedrino came to grief at the telegraph pole, and there were only seventeen finishers of it. It was in this lap that Duray had his first trouble with tires. When Christie came past, his engine was skipping badly. There were a number of changes in this round, among the most interesting being the moving up of Heath, who was driving a careful, even race, jumping from eighth place to fourth in point of time, while Hemery slipped from sixth place to fourth.

Summary of the round: No. 4, Lancia, first; No. 1, Jenatzy, sixth; No. 2, Duray, fifth; No. 10, Sisz, second; No. 5, Keene, ninth; No. 9, Warden, eighth; No. 7, Tracy, tenth; No. 14, Heath, fourth; No. 6, Wagner, twelfth; No. 18, Hemery, third; No. 20, Sartori, seventh; No. 16, Chevrolet, eleventh; No. 8, Nazarri, thirteenth; No. 19, White, fourteenth; No. 15, Lytle, fifteenth; No. 11, Christie, sixteenth; No. 3, Dingley, seventeenth.

The first big cut made in the number of competitors came in the fourth round, when Wagner, Jenatzy and Christie had their troubles and withdrew. At the end of the fourth round Lancia had further increased his lead and Heath had taken second place from Sisz. Sartori was then coming to the front, having gained third place, while Warden was fourth and Sisz fifth.

The lap summary: No. 4, Lancia, first; No. 9, Warden, fourth; No. 5, Keene, sixth; No. 14, Heath, second; No. 10, Sisz, fifth; No. 7, Tracy, seventh; No. 20 Sartori, third; No. 2, Duray, tenth; No. 18, Hemery, eighth; No. 8, Nazarri, eleventh; No. 16, Chevrolet, ninth; No. 15, Lytle, thirteenth; No. 19, White, twelfth; No. 3, Dingley, fourteenth.

It was in the fourth lap that the fastest time in the race was made, Lancia completing the round at the average speed of 72.94 miles an hour. The fifth round and half of the race was finished by twelve of the nineteen starters. It was on this turn that Lytle dropped out after hitting the fence. White was still going, but he did not finish the lap before the race was called off. On this lap Keene loomed up as a rival of Heath for second place by moving from sixth position to third. Lancia had increased his lead so that his victory seemed a foregone conclusion. At the end of half the race he had a margin of 13 minutes 16 seconds over Heath and was going like wildfire. Sartori had dropped back to fourth place, while Sisz retained fifth position. Summary of the lap: No. 4, Lancia, first; No. 5, Keene, third; No. 14, Heath, second; No. 7, Tracy, seventh; No. 10, Sisz, fifth; No. 9, Warden, eighth; No. 2, Duray 9; No. 20, Sartori, fourth; No. 18, Hemery, sixth; No. 8, Nazarri, tenth; No. 16, Chevrolet, eleventh; No. 3, Dingley, twelfth.

All this while Hemery was not attracting much attention, not any as a possible winner. He was driving a consistent, plugging race and had been moving up and slipping back. In the sixth lap Hemery moved again from sixth place to third, Keene having broken his car. Only ten finished the sixth lap, Lancia, Heath and Hemery being first, second and third. Sixth round summary: No. 4, Lancia, first; No. 2, Duray, sixth; No. 7, Tracy, fifth; No. 10, Hemery, third; No. 8, Nazarri, eighth; No. 9, Warden, ninth; No. 10, Sisz, fourth; No. 14, Heath, second; No. 16, Chevrolet, tenth; No. 20, Sartori, seventh.

SISZ IN RENAULT GOING FULL SPEED

In the seventh round the actual positions of the first three men were unchanged, although Lancia had increased his lead. Only nine completed this round, Chevrolet having dropped out with a broken axle. Here is the order of finish and actual positions: No. 4, Lancia, first; No. 14, Heath, second; No. 18, Hemery, third; No. 7, Tracy, fifth; No. 10, Sisz, fourth; No. 8, Nazarri, sixth; No. 2, Duray, ninth; No. 20, Sartori, seventh; No. 9, Warden, eighth.

Round number eight was the eventful one, when the fortunes of the race changed in a way that disappointed everyone. Christie had been making repairs since the third round and was running again, when Lancia pulled into the road from the Fiat station, where he had stopped for oil. The collision between them delayed Lancia enough for him to lose all the benefit of his magnificent running. In spite of all he could do he was sixth in the time table at the end of the eighth lap with the remaining distance of the space too small for him to regain the lead. It was in this lap that Hemery took the lead after both he and Heath had done some hard running for the place. In this lap only eight finished before time was called. The summary of it tells its own story: No. 18, Hemery, first; No. 14, Heath, second; No. 8, Nazarri, third; No. 10, Sisz, fourth; No. 7, Tracy, fifth; No. 4, Lancia, sixth; No. 20, Sartori, seventh; No. 9, Warden, eighth.

Throughout the eighth and ninth rounds Lancia drove like a demon. Heath and Hemery and Tracy also had all increased their speed. The excitement in the stands during the last 2 laps was intense. Lancia passed Nazarri and Warden and made up enough time to be in third position. Tracy beat Sisz out of fourth place, in the ninth round, and Heath tried in vain to get the lead from Hemery. Only five finished this next to the last lap before the race was called off and their order was: No. 18, Hemery, first; No. 14, Heath, second; No. 4, Lancia, third; No. 7, Tracy, fourth; No. 10, Sisz, fifth.

How Tracy gained third place in the last lap and scored the first notable achievement with an American car in a big road race and how Hemery kept his lead over Heath and won the race has already been told.

THE CONTEST BY MEN

A race like the Vanderbilt is, after all, largely a race of men rather than machines. The spectator not of the trade speaks of the position of Hemery, Dingley, Heath, etc., not of where or how is faring the Darracq, the Pope-Toledo, the Panhard, etc. Yet when the facts are analyzed it is the combination of the man and the machine which was competing on the Nassau circuit last Saturday. A story which tells what each man did and what each machine did, complex as were their relations to each other, is the real story of what happened. The co-relation of one man to another, of one machine as regards its competitor, of one lap to another—these are for the ultra-technical to gloat over. The student of human nature is interested rather in the individuality, the work, the accidents and the glory or grief of the men who participated. Hear then the tale of the people:

Digitized by Google

No. 1. JENATZY—The first of the German cars was the pathfinder. Jenatzy's mission was to push forward and find his way where no other car had preceded him along the oil-soaked course. He had nothing to guide him. He did not know whether the flagmen and special officers had done their duty. He had to trust to what the donor of the trophy called the "inherent good sense of the American people," to be sure that he would not plow through the masses which had gathered to see the contest. Jenatzy came to the starting point at least a good ½ hour before the time called for. He stood about and visited with friends, chiefly Frenchmen, for this Belgian driver of a German machine on American territory speaks no English. He investigated the car to see that all was in order and admonished his mechanic, Bariz, concerning the condition and handling of the car. Jenatzy has been a veteran too long to neglect any of the details. When he started his engine and rolled to the tape, he had put in plenty of oil, as was evident from the dense cloud of dirty yellow smoke which rolled out and enveloped the press stand so that no one in it could see the car or driver. Through the smoke-cloud came the sound of Wagner in bad French, calling the seconds before the start. Jenatzy was nervous. He fumbled with the levers and shook hands with Mr. Vanderbilt and others and watched the starter and Kerrison who held the watch and glanced about him with quick, bright glances. But when he received the word to start, he stiffened up and was as adamant as he grasped the steering wheel and started the power into the driving chains. He made a good start, the machine bucking slightly and then getting down to business. Jenatzy struck a good pace right from the start. He found the roadway unimpeded and, knowing what had been launched at him from the rear, felt it his duty to keep as far out of the way as possible. He drove without troubles of any kind for one lap. It was he who sailed past the crowded stand in his proper position and he was almost the only man who did so. He had everything to himself at that time. It was on the third lap that he made a stop for oil at the East Norwich control. He was delayed only a few seconds and pushed on, still holding his own fairly well, though Lancia was at that time considerably ahead on elapsed time, if he had known it. It was on the fourth round as he drove hard at the Bull's Head turn that he noticed the car was not giving its proper power. He pulled up at the side of the road and made a hasty inspection. He found out that he had cracked two cylinders, probably under the strain of making the turn. This settled Jenatzy, and as he softly swore to himself he realized that he had no chance. Now Jenatzy has driven in so many races that it is evident to him when he is beaten. He wasted no time in trying to accomplish the impossible, but secured a tow and left the course. He might have been a factor had his machine held together. The fracture of the cylinders was similar to that which happened to C. G. Dinsmore's machine last year. Jenatzy probably made the fast drive at the Bull's Head turn because he did not realize that he was out of the woods until the corner was upon him. The fact that one comes to the Bull's Head when one is least expecting it, is the reason there were so many incidents and accidents at this point.

THE DUCHESS OF MARLBOROUGH

No. 2.—DURAY—Duray's blue de Dietrich flashed past the stand with a great deal of regularity. He had come to the tape rather calm for a Frenchman. He was a decided relief after the antics of the nervous Jenatzy. But like all the Frenchmen, Duray carried an intimation in his manner that he was playing to the grand stand. He had unbounded faith in his machine. His start, however, was not so good as that of the man who preceded him by a minute. His mechanic was named Frankville and was an agile little fellow. Duray also ran steadily for a lap or two. In the fourth round, however, in the North Hemstead backstretch, a stone flew up in the carbureter and jammed the gears. There was a wait as many cars flew past, while Duray examined the damage. He found that his intermediate speed gears were in bad shape. Some of the teeth had been ground away and it was necessary for him to use high speed. This he did when he got started, somewhat behind. He drove hard and on the turns did either of two things, ran on his first speed and crawled around them, or drove on his high speed and trusted to whatever diety a French driver worshiped. It was a frightful chance to take, but Duray took it at Jericho, and at Hyde Park. Thrice Duray had to stop to adjust the gears. Each time he had his tires inspected and once, at Jericho, he had a new tire placed on one of the rear wheels. He was still running when the race was over and was stopped by telephoned directions from the grand stand. Duray was expected to be the dark horse among the Frenchmen. It is said that he it was who tried to organize the French drivers into a team and have the work done under signaled directions from the stand. But he failed because Heath refused to drive in a combination. There is an intimation that the Darracqs were actually driven by signal. This will be explained later.

No. 3. DINGLEY—Dingley and his mechanic in khaki looked very businesslike as they came to the tape. They were greeted with a cheer, the first sound which the grand stand had made, aside from the buzz which betokened much conversation. Evidently the grand stand expected a great deal of Dingley. He made the first lap in fairly good time. It was in the second lap after he had rounded the S turn that he cracked a cylinder. Dingley was a long way from anywhere. He could not get a telephone and there was nothing to be done but to take a walk to the Lakeville control. He walked or ran the two intervening miles and got the tools to sever the pipe connections. Then he was driven back in the Pope tender car to the scene of the trouble and there he made the repair and took up the work of driving again. He had to run on three cylinders and this he did, being still in the running at the close of the race. But Dingley was also hampered by tire trouble which overtook at two points on the course. Nearly all his broken tires and other delays came at the western end of the course. "It is the hoodoo locality," he said.

No. 4. LANCIA—Possibly Lancia means "lance." It ought to, anyway. Lancia was one, as he cut through the field and had all the race at his mercy up to the fifth round. He was leading after that.

LOOKING SOUTHEAST FROM THE PRESS STAND

NAZZARO STRAIGHTENING UP AT LAKEVILLE

HEATH'S FINISH

KEENE TURNING CORNER AT NEW HYDE PARK

for even a smashed car can do some running and Lancia was miles and miles ahead of his nearest rival. Lancia looked worried as he prepared for the start. He had a heavy look as if he was thinking too much for an Italian. He stood waiting for the word, given to him in French, his big machine rattling like a truck going over heavy cobblestones. It was quite the loudest exhaust the grand stand had ever heard. There was power in every vibration. Lancia wore a sweater of gray material and looked somewhat illy prepared for the race. He wore a white collar under the sweater as if he had been called suddenly from some cleaner occupation to drive the race. The on-lookers gasped as he left the stand, so fierce and sudden was his dash to the fore. From that time on, Lancia's course was simply described in one word—speed. He sacrificed everything to it, except care at the Lakeville, Bull's Head and Willis avenue turns. These places he approached with a good deal of dash, but shut down as he took the actual corners. This was noticeable during the early stages of the race. After the collision with Christie, Lancia grew more reckless. It was then a question of holding enough of his lead to win and he took every possible chance. Lancia stopped once at Lakeville for a puncture and had a Michelin fastened to a front wheel in record-breaking time. He thought he needed another set of tires on the fifth round and stopped to have them put on at the control near the S turn, also having water and oil renewals. As a matter of fact, Lancia figured that the race was half over and that he would be better off if he ran the second half with a new equipment. He stopped just a moment too long, however, as it happened. As the work was completed and Lancia had climbed back into his car the flagman nearby shouted, "Car coming!" Apparently Lancia did not hear the call. If he did he did not understand it, nor did he grasp the meaning of the frantic motions which the flagman was making to hold him back. He shot into the road just as Christie came along and the two rear wheels of the two machines came together. Lancia had had time to turn slightly and the blow was a glancing one, so that, instead of being utterly demolished, he received only a broken rear wheel. Christie was less fortunate. The big blue front-drive car was whirled round and almost overturned and Leitner, the mechanic, went flying for 30 or more feet and landed against the base of a large tree, knocked out. A great crowd at once surrounded the two machines. A physician who happened to be present went at once to the aid of the injured man. The crowd evidently supposed that Lancia had done this thing deliberately. They made a rush for Lancia, who did not understand what they were about. He stood calmly watching them, but when it was explained that they deemed him almost a murderer, he grew excited and explained volubly that he had not known that Christie was there and that if he had tried it, he was just as likely to have been killed as the occupants of the other car. The logic of this thing translated to the crowd seemed to abate its fury for it faded away from Lancia's locality and spent its time looking at the wrecked American car. In the meantime, Lancia's mechanical force had got to work and had replaced the injured wheel. The Italian was ready to start in less than 20 minutes from the time the injury occurred and was on his way a moment after in an effort to hold his lead. But a crippled car cannot go as fast as one in good condition and the Fiat was undoubtedly injured more than showed on the surface. Lancia was unable to make the time he had been making and fell steadily behind. In the eighth lap he had tire trouble and more trouble with the wheels and steering gear and there was a further delay which served to set him back long enough to lose the third place to Joe Tracy, who had been plugging steadily forward, holding his own. Lancia ran round to the stand after the race and explained things to Mr. Hollander, who entered the car. He was not inclined to shirk the blame and said frankly that the collision was his own fault. But he alleged that he had not used undue carelessness and that he had been improperly warned. Mr. Christie was not inclined to blame Lancia after the race was finished. He said it was one of the incidents of road racing and he and Lancia had been the sufferers and that there wasn't anything further to be said about it. Had Lancia not suffered the collision, he would undoubtedly have set a new record for road racing. During the time his car was in trim he had every record ever made beaten to a frazzle and drove with consummate ability. His first 4 laps were made at an average speed of over 70 miles an hour. His fourth lap, in 23:18, was at the rate of 72.96 miles an hour. This is running some.

No. 5. KEENE—Foxhall Keene drove a fine race, but was a little too daring on the curves. This eventually was the means of his being taken off as a contestant. He was perfectly cool at the start and continued so throughout the race. He wore a heavy gray ulster and didn't look much like a race driver. His mechanician Luttgen, was dressed in black leather and seemed nervous. Keene spoke to him just as the car started. The start was good. From first to last the running of Keene was steady and fast. He climbed from a low position to a high one and was next the leader when he ran into the telegraph pole at the S turn and was down and out. He stopped once for gasoline, but outside of that had no delays. He had absolutely no tire trouble. Keene met his finish at the pole which, situated just at the first turn of the Willis avenue S, was a menace to every driver in the race. The racing board had made ineffectual efforts to have it removed. Keene would not have hit the pole if he had slowed down more. But he skidded and it was the pole which stopped the skid. Luttgen had leaned over to avoid the pole and the shock threw him across Keene's face and down between the wheels on the driver's side. He managed to roll under the body of the machine and escape the wheels of Keene's car and those of Heath's Pierce-Arrow which almost went over him as the latter sped by. Keene drove the car up in the field near by and after looking it over abandoned it and went back to the stand. He was told that he was second in the race and said it was "awfully hard luck, but—with a shrug—it was only luck, don't you know."

No. 6. WAGNER—How much credit should be given to a story which was

told after the race is doubtful. This was to the effect that the two Darracq cars were run by a man in the stand who with two assistants on other points of the course dictated to the drivers by signals how they were to drive and at what speed. It doesn't really make a great deal of difference so far as Wagner was concerned. He had ignition troubles in the third round which put him out of the running. Wagner had the first car without a hood which came to the tape. He and his mechanic wore sweaters with the word "Darracq" on their chests and looked nervous. Wagner made a good getaway and ran well for the 2 laps when he was a factor. On the second lap he burst a tire on a rear wheel as he passed the stand and called forth some excitement by dodging a man with a camera who persisted in crossing the track ahead of the car. Wagner said afterwards that he had not seen the man. It is probable that the man was not as near the car as the spectators imagined. Wagner had no other tire trouble than this during the time he was running. He took his early retirement cheerfully and said the breakdown was such as might have happened to anyone. He said it was not the fault of anyone in particular, but refused to explain it.

No. 7. TRACY—Joseph Tracy, with his yellow handkerchief about his neck, drove through the race without scarcely stopping. Three stops for oil and gasoline during the whole ten rounds were all that were recorded and so far as could be ascertained he had no tire trouble. The machine ran steadily and without missing and Tracy simply pounded away and waited for the foreigners to tire out or for the inevitable accidents to occur. He took no chances at the turns and altogether drove a consistent and careful race. His securing third place was as well as he could have done with the machine he drove, which he had had fitted with two new cylinders the night before and he is deserving of great praise for having made so good a showing and for upholding the credit of America in the race. His was the only American machine which made a good showing. Part of his success was luck, of course, but Tracy tried to make the luck as little of a factor as possible. Further than this, not much can be said of the details of his race. His rounds were made too consistently to allow of incident. He made a special spurt at the finish and earned the position which he gained.

No. 8. NAZARRI—It seemed when Nazarri got away from the grand stand, as if the Fiat which he drove was working on three cylinders. It was not running well by any means, though Nazarri seemed to be sure of himself. He took both hands from the steering wheel and waved them in the air as he started. He was decidedly gay. It was in the second lap that Nazarri had to stop at Jericho and look after his ignition. There were batteries and wires to replace and some changes to make which took up considerable time. It was this loss of time which put him behind and kept him behind all through the race. Nazarri kept manfully at it and was running on his last round when the race was called off.

No. 9. WARDEN—Warden was the second man to be cheered as he drew up alongside Starter Wagner. This was because he had been energetic and had replaced broken cylinders with new ones in time to enter the race. His machine, like that of Jenatzy, started in a cloud of smoke. For 4 laps he ran well and was well up in the list of those who might be among the leaders. But in the fifth, sixth and seventh rounds, Warden had tire trouble at various points around the course, and besides, his new cylinders did not work as well as they might. He simply lost time, lost time, and then lost more time until he was so far behind that his case was a hopeless one. Warden drove a careful race and took the corners in a gingerly manner. On the straights he let out the Mercedes for all that was in her.

No. 10. SISZ—Sisz was the interesting figure, from a spectacular standpoint, of the whole race. His machine was distinctive in appearance and was very fast. He was dressed in black leather, as was his Russian mechanic, Dimietrivietch. The great oval hood, painted red, marked the Renault at all stages of the game. Everybody knew Sisz. Everybody knew the Renault. As the car raced by the stand, neck and neck with Keene's Mercedes, one of the most exciting moments of the race was experienced by the spectators. Sisz's trouble was with his radiator. It began to leak during the first lap and kept it up steadily. Sisz had to stop repeatedly and refill. Once he had to stop far from a control on the Jericho turnpike and send his mechanic on a run to a farmhouse for water. While he was gone Sisz changed a spark plug and adjusted two more. A prominent engineer in the automobile trade, who stood near, said afterward that he had never seen adjustments and replacements made with such agility and speed. He said Sisz's fingers worked like machinery and that changes were made so fast that the eye could hardly follow them. Sisz was running when the race was called off and was a good fifth to Lancia's fourth. Had the race been a round or two longer, he would undoubtedly have overhauled the Italian and probably Tracy.

No. 11. CHRISTIE—Walter Christie lost time at the start. He was more than 28 minutes after his starting time when he entered the race with a flying start granted by the referee. He had tire trouble and ignition trouble, but on the whole was not doing badly when he collided with Lancia. At this time, he avers, his machine was running better than it had run at any time and he had hopes of gaining some sort of a position.

No. 12. CEDRINO—Cedrino's career was brief. He started well, made 2 laps without incident and was a factor in the game when he ran into a pole at Lakeville and smashed the steering gear. Then it was all over.

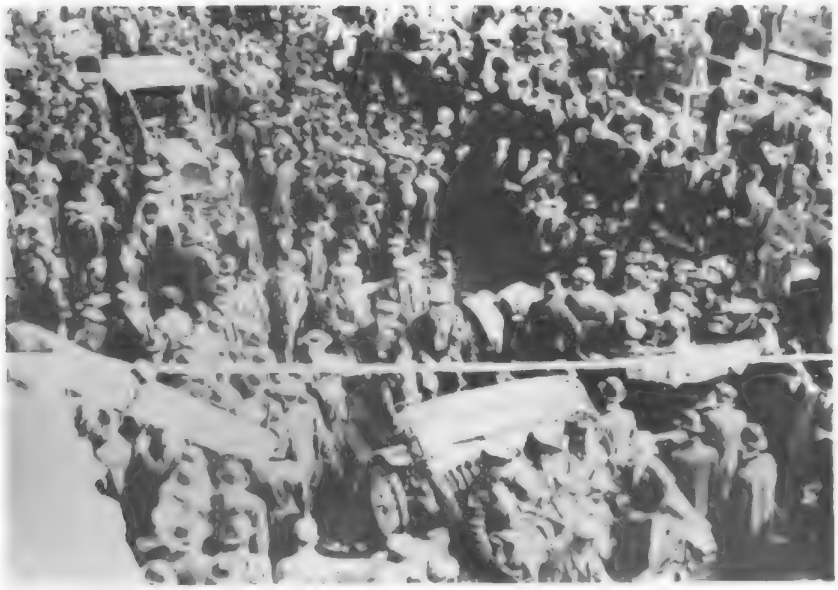
No. 13. CAMPBELL—Campbell was carrying the letter X in place of the number 13. But it was no use. He ran 1 lap and was then thirteenth man. Then he quit. A leaky gasoline tank did the business.

No. 14. HEATH—There is not much to tell about the running of Heath. He drove a race similar in all respects to the race driven a year ago on the old course. He avoided the sharp turns and speeded on the straightaway. He was calm, nerveless, steady. He lifted his hand in salute each time he passed the stand where his wife sat watching him anxiously. He did not stop during the whole course of the race except for the perfunctory duties of refilling his tanks, except once near the Willis

WILLIS K., JR.

LANCIA PASSING THE VANDERBILT ESTATE

HEATH ON SHARP TURN AT LAKEVILLE



VIEW OF THE CROWD AS IT PACKED THE COURSE AFTER LANCIA HAD FINISHED

avenue turn, when he had an adjustment to make. He received the announcement that he was second with calm imperturbability and had no comments to make on the race or on any of the drivers.

No. 15. LYTLE—Lytle was the favorite among the Americans, although his was a car added by the cup commission. Lytle had all manner of ill luck. His tires went wrong almost from the start, and he completed the hoodoo record by running into a large Newfoundland dog, whose corpse assisted in rendering the steering gear a wreck. Before this, Tattersoll had been thrown out of the machine and Lytle had attempted to proceed without a mechanic, which would have spelt disqualification for him if he had succeeded in doing it. Then he had chains which broke, and finally found himself helpless a long way from a control. He tried to call up the repair station on the telephone and lost 10 minutes in a vain effort to do so. Then he quit.

No. 16. CHEVROLET—Chevrolet was the third man to come to grief at the S turn. His car skidded into the same telegraph pole as that of Keene. It was on the sixth lap and the Frenchman had been doing well up to that point. His only stops had been for supplies and for one bursted tire at Lakeville. He, too, took the first turn of the Willis avenue serpentine at a fast gait. His car landed with a glancing blow against the fatal pole which already had a huge chunk torn out by the Keene Mercedes. Chevrolet, with admirable control, drove his car off the road and kept it right side up with care until he reached the center of a large field adjoining the course. Then he crawled from his seat and looked the damage over. He had nothing to say except that it was his own fault. The car had a bent axle and could not be steered at speed. The car had not been making the speed it should have done. Chevrolet was the only man at the start who seemed afraid of the work before him. He was painfully white about the lips and his hand shook perceptibly.

No. 18. HEMERY—Hemery won through good head work. The Darracq machines were not by any means the fastest in the race and needed attention because of the delicate mechanical construction. Hemery humored the machine constantly. He took no chances and he and Wagner were signalled to from the grand stand every time they passed us to how fast they were going and their position. It is also believed that there were other Darracq signal men stationed about the course, for Hemery knew every time he stopped for oil or gasoline just where he stood and what his chances were. He was very attentive and business-like at the starting line. He wore a dark sweater with the word "Darracq" embroidered on it, as did Wagner. Hemery made only perfunctory stops until the beginning of the sixth round, when he ran into the Dunlop control near Jericho and changed all four tires. The tires were not injured, but he was under orders to take no chances. The result proved the wisdom of the action. He had no tire trouble and no engine trouble to speak of. Hemery was very quiet over winning of cup. Friends vociferously crowded about and kissed him

VANDERBILT TO TATTERSOLL'S RESCUE

all over his smoke and oil-grimed face. He said the machine did it—not him. He said he had no fault to find with the course, but that with fewer turns and corners he would have made the Florio road race record look like 30 centimes. Then he grinned while the remark was translated.

No. 19. WHITE—Every one laughed as White started away when he received the word go from Wagner. Taking a lesson from experience in the eliminating trial, White started very gently and allowed the steamer to glide softly forward for 20 feet before he threw on pressure. This was so different from his brash start in the trials that the crowd laughed heartily. White drove in a gingerly way and had trouble from the first. His gears did not work and his tires burst and were punctured with heart-breaking inconsistency. Before he had gone 1 lap he was laid up for repairs at Bull's Head control. It took him more than 4 hours to make 4 laps and when he finally stopped it was because the cylinder head had broken. Even then he made an attempt to keep going. He tried to get Bull's Head control on the wire, but wasted 10 minutes in fruitless attempt. Then he borrowed a bicycle and began the stunt done by Robertson in the eliminating race. Before he had ridden 2 miles the chain of the bicycle broke and White was forced to give up. He said: "I guess the next thing to go will be my leg or neck, and suppose I'd better save that." He said the cylinder head repair was easy, if he could only have gotten the part. Tears stood in his eyes as he told of his hard luck.

No. 20. SARTORI—The veteran was very careful as he started. He drove better than he was ever known to drive on any American track or road. He got a great deal out of his car and was still running when the race stopped. He had made 8 laps. He had tire and wire troubles at various points and stopped on an average once each lap for tinkering. But on the eighth round the car was running better than ever and might have had a chance if early troubles could have been avoided. He was stoical over his defeat, but hoped for another chance at the cup.

SIDE LIGHTS ON THE RACE

America has demonstrated that it is getting there in the matter of building fast cars and that it is there with the goods in the matter of tires. Taking all things into consideration the American cars came out of the scrimmage with about as clean a record as did those of foreign make. Not a Mercedes car finished, though in fairness it must be said that Warden in this make of machine was still running when the race was stopped. Of the French cars Hemery's Darracq and Heath's Panhard came in first and second, Sisz' Renault was still running, but Duray's de Dietrich and Wagner's Darracq were out of it somewhere. Only Cedrino and Chevrolet in Fiats were put out, while the other Fiat drivers, Nazarri and Sartori were still running when the race was stopped, while Lancia had made his remarkable run into fourth place. Joe Tracy was the only American to finish, his Locomobile seeing him through without the least

Digitized by Google

trouble, while his Diamond tires carried him the entire distance without change, a record never before made save in the Florio cup race. The other American cars were put out from one cause or another, but, with the exception of Dingley's Pope-Toledo, whose cylinder cracked, there developed no structural weaknesses.

The Vanderbilt cup race will go down in history as the greatest road event up to and including the year 1906. It was the superior of any foreign event in so many points that is must be conceded that America has topped the heap. This is all the more apparent if attendance and enthusiasm is to be taken into consideration. The enthusiasm was so acute that were some of the members of the motorphobia press—even including writers on the Chicago Tribune and Inter Ocean—had been present they, too, would have been forced into the spirit of the occasion and would have become automobilists if they could have their individual ways about such matters. With the metropolis of the western hemisphere to draw from, to say nothing of the hundreds of towns and cities within a radius of a hundred miles, and the course but a matter of some 25 or 30 miles away, is it at all astonishing that there should have been a record crowd to see time annihilated? It is a safe estimate that a hundred thousand people saw the race from various points around the 28-mile circuit and if this is any indication of the interest in automobiling in this country then well may the motorphobia press pull in its horns and admit it is on the wrong side of the fence. A surging crowd extended in either direction from any point around the entire course. The people went on foot, in horse-drawn vehicles, in automobiles and on bicycles. It would appear as if everything with a motor had been lined up along the course; there must have been a good 5,000 machines of all ages and all descriptions somewhere on that 28-mile stretch.

There was as much difference between the drivers and their methods of handling their mounts as there is between as many jockeys. Smiling, good-natured Lancia created the most favorable impression from the start. His handling of a car was supreme, he was easily the king of them all, driving with an ease that betokened the master. Heath, American, calm, confident and steady. Not a waver was noticeable, not a hitch, not a move except recognition of his family in a box by the raising each lap of his right hand. Hemery, daring as Gabriel, handling with wonderful daring a car that bobbed around like a cork, caring for nothing but his desire to cover ground. Joe Tracy, careful, watchful and cautious, but driving with an intent to finish and make some pretense of upholding America's honor. Tracy was not looked upon as a favorite; he was not making an impression at first. It was after one by one of the foreigners or his team mates had been lost and he had kept on going, going, going, that he began to receive the attention of the crowd. Then this attention began to grow and he was told of it as he finished another and

THE TIMERS AT WORK

another lap and was nearing the end with bright prospects for a place in view. Sisz, another daredevil but seemingly lacking in ability to pilot his car quite as fast as others but driving splendidly. And Jenatzy, a favorite at the start and as long as he lasted, but unfortunate, as has been his record for the past two seasons. Walter White plainly showed his lack of experience in such a contest, but he started off with no intention of repeating his performance in the eliminating trial by breaking a universal joint or anything else by a too sudden opening of the throttle. His was the slowest of all the starts. Lancia, Hemery and Jenatzy tied for quick getaways.

Word comes by cable that the Automobile Club of France has recognized the suspension of Hemery for 1 year by the Italian racing authorities and disbarred him from racing in France during that period. The original suspension grew out of a row over a mix-up of the timing at the end of the Florio cup race, during which Hemery, in his excitement, was impertinent to the Italian race officials.

The Darracq racers ran on a schedule and system devised and directed by Mr. Rawlinson, an Englishman, who is said to be chief stockholder of the company. Hemery and Wagner were instructed not to exceed 26 minutes for the first 6 rounds, it being figured out that their reckless rivals would wreck their cars through excessive speed and that in the last 5 laps there would be ample opportunity to take to chance and make up lost ground. Rawlinson and an assistant sat in the grand stand and displayed cards indicating the time and position of the Darracq men and also warning them when to quicken or slacken their speed. It now turns out that in Thursday's practice two cylinders were cracked in Hemery's car and were replaced from an extra racer of the same pattern kept for just such an emergency.

Before the race was run it was freely predicted that there would be not only one but several fatalities, and as a result the future of road racing was then and there doomed—if accidents occurred. There was a good cause to believe this, for when those thundering locomotives of the road swept through the narrow lines of human beings it seemed as if nothing could stay the hand of fate and leave the race free from more than one sad tale. The death of one dog evidently did not count, for there were few who did not openly express the opinion that next year would see another race and over the same course. There is no danger that the Nassau county people will prevent a race, they reaped a bigger harvest on this race than they could gather in ordinary ways in twice several years. They will even go to the trouble to make long, easy turns and bank them at that. That's what some of the county officials say, anyway. Between justice court justice, prairie feather beds, ham and eggs and other things dished up to the visitors the Long Islander fared pretty well toward the right side of his ledger.

"To Hemery and France the race; to Lancia and Italy the glory" was the trite way the New York Herald told the story of the big contest, and no few words could have been selected and put together to give a better idea of the feeling of the entire crowd which witnessed America's second big road event and the equal of the contests which are run

LANCIA SURROUNDED BY AN IDIENSE MOB AT THE END OF THE RACE

Digitized by Google

tournament and agreed to buy his car besides. Keene is to compete and the White people are to send down their road and track racers.

It might have been impossible to afford better protection to not only the crowd but the contestants by keeping the course clear, but the officials declared it was beyond human power unless Uncle Sam had loaned his standing army to act in the capacity of a police force. It was not a fact that the road was kept clear of people and in this the Americans will doubtless receive some criticism by foreigners. Still, it must be remembered that there was not a spectator hurt, which is the best evidence that the affair was properly managed. The system of flagging was ideal and was probably responsible for the absence of any trouble to spectators and to contestants as well.

HEMERY'S CAR AFIRE

New York, Oct. 15—The law of compensation got in its deadly work on Hemery, winner of the Vanderbilt cup. As he was seated on the lawn at his quarters at the Glendale hotel, at Glen Head, today, surrounded by Duray, Wagner, Jenatzy and other friends, to say nothing of a gaping crowd of admiring rustics, flames suddenly leaped from the ground and enveloped the speedy Darracq, which had won for him the victory. The car had been taken from the stable and was being cleaned preparatory to being shipped back to France. There was much oil and gasoline on it and the ground, too, was soaked with these combustibles. A lighted match was thrown. A blaze started at once. All hands sprang to the rescue and fought the flames with sand and water to naught avail. The fuel had to burn itself out. The car, however, was not totally injured as there were only the tires and seat upholstery to burn. The car had not been sold, as was stated in the printed reports.

CAILLOIS TOO LATE

New York, Oct. 16—Caillois, who was second to Thery this year in the French trial, dropped in at the MOTOR AGE office this morning. The Savoie arrived too late Saturday for him to see the race. "I am delighted at the result of the race," said he. "Hemery and Heath, you know, were put on the French team to take the places of Thery and myself. I thought Hemery had a good chance, for his car is built right for such contests. It is light and not too highly powered. Lancia is the most wonderful automobile acrobat in the world.

"His daring is marvelous, but he is not a safe driver and is likely at any moment to lose through an accident. From the results of the race and what I am told I judge that you have a splendid course, though it is too narrow in places to be ideal. I think the length of the circuit is not a bit too short, but the length of the race is. It should be at least 400 miles to test the cars. In so short a race as 283 miles any car may have the luck to win. It is a sport all the way and the drivers take too great risks. I cannot say whether the Bennett race will be run next year; but it is nonsense to talk of making it a race for touring cars. How could you fairly match cars of different powers? Are you going to have any more track races? I like them. They are full of interest for the spectator, but they are very dangerous to the drivers. I wanted to race in the Vanderbilt this year, but my firm would not let me. Perhaps there will be a race here next year and then I hope to be on hand. Thery, though, is through with racing for good. I am not ready to quit myself, for I like the game, and besides I have not yet accumulated the fortune my team mate has on the road."

BANQUETTED THE FORLIGNERS

New York, Oct. 17—The foreign drivers were conspicuous chiefly by their absence at the smoker and reception tendered them tonight at the A. C. A. Barney alone was present. Tracy, of the American team, however, was on hand, as was also Caillois, the runner up to Thery in the French trial. Nazarri and Lancia had gone to Niagara Falls and the others were probably sight seeing or in arranging for the shipment of their cars. The rooms, however, were crowded with members and others. President Morris made a neat little speech congratulating France and prophesying that Uncle Sam, in view of Tracy's success, would lift the cup back next year.

It is probable that most of the foreigners will depart by the Thursday and Saturday steamers unless they can be persuaded to stay over for a race meet that is being arranged for them on Atlantic City beach on Friday and Saturday of next week.

A banquet has been arranged by Senator Morgan in honor of the visitors, which will occur at the New York Press Club tomorrow night.

AFTER THE RACE THOUSANDS OF PEOPLE CROWDED THE ROAD, PREVENTING AUTOMOBILES FROM LEAVING THE PARKING SPACES

MOTOR AGE

New York Office
29 West 42nd Street
London Office
American Publicity
Bureau 58 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the
Trade Press Co. N. H. Van Sicklen
Manager. Telephone Harrison 4410

Member National Association of Automobile Manufacturers. Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year. Foreign subscription four dollars
The Western News Co. of Chicago and its branches
supply newsdealers. Entered at the
Chicago postoffice as second class matter

WHAT THE BIG RACE INDICATES

AMERICA can well feel proud of its record in the Vanderbilt cup race, a record which few, even the most patriotic, believed it capable of making—that one of its cars finished better than fifth was more than most people expected. It was long ago conceded that either France or Italy would carry off the honors, Germany having lost prestige in contests of this sort.

This year's contest had much more of the international flavor than did the first Vanderbilt cup race, notwithstanding the presence then of some of the foreign drivers, who, however, bore no such reputations as speed merchants as did those who came across the ocean this year to try conclusions with the Americans. The success of two American cars last year could not be accounted as a victory from a speed point of view, for those cars did not show remarkable speed. This year, however, an American car finished third in the choicest field ever seen and not only made a record in this respect, but went through the contest without so much as stopping to inflate tires, much less replace parts and tires. It was a tire victory as well as a car victory; it was a tire victory which has only once been equalled, and that in the Florio cup race. It was also a victory for an American driver, whom the foreigners did not fear before the race, but whom they must take into consideration in the future international long distance road contests.

America need not by any means feel at all discouraged at the outcome of this event simply because but one of its cars finished. That one car finishing third in such a field of starters is sufficient glory to warrant it in throwing up its hat and shouting. America can now see what it must do to win such a contest; to hold its own with those countries which have had many years of experience in building racing cars and in operating them. America can easily see that she is gaining in experience in building good cars, cars that will withstand the terrific strain to which they are put in such a contest.

It has been a long, discouraging fight to get near the clearing. Perhaps we should whistle softly, but we can whistle a little, just the same. Whistling always encourages—it seems to drive away fear. Let the American maker whistle softly, but let him keep on building cars and making the gains he has been making and the world will hear of not only one American car finishing but of several doing likewise.

Tracy's driving in the Vanderbilt cup race was such as to show that an American can do what any other man can do; the conduct of his car was such as to show that an American car can be made the equal of any on earth, and further it was demonstrated that American tires can be and are being made to not only hold their own against the world but to put up a record which will withstand a lot of continuous beating.

America has been a little slow in this road racing game. She has been slow to profit by mistakes, but she has finally come around to a sensible way of reasoning and is now on that road which must eventually lead to the top of the hill. It may take a little more time, but it will come, nevertheless.

France is to be congratulated upon its success, but at the same time it must realize that its southern neighbor, much younger in the field of automobile racing and automobile manufacturing, is leading it this very day in propositions involving speed in automobiles. Hemery drove an excellent race, he is entitled to all credit; but, barring an accident, which was no fault of the car, Lancia was as sure a winner as ever was known. The race was Lancia's from the start—in the language of the street, "there was nothing to it."

The race itself was a well conducted affair on the whole—far better than most people had expected. It was devoid of accidents of any moment to contestants and not a spectator was so much as frightened. Those who advocated the abandonment of road racing have had what little wind was left taken out of their sails. Road racing has been shown to be as safe and safer than boulevard riding. It stands in the same light as the 18-hour train—the road is so well guarded that accidents are almost impossibilities. In all forms of sport there is some element of danger, but with the care that was exercised in the conduct of the Vanderbilt cup race road racing dangers have been minimized, and, in short, eliminated.

Next year will probably see another event of a similar nature and not unlikely over the same course. The result of the race of Saturday was so encouraging to American makers that a number have already promised to go into the manufacture of racing machines for the purpose of showing to the world that they can and will make cars equal to those of foreign construction in point of speed and lasting qualities. The American has heretofore been discouraged; now he is hopeful and will begin turning out a racing car, all the time keeping up his tuneful little whistle, softly though it be. He can afford to whistle softly, but at the same time he will be whistling with more confidence than he has ever dared to pucker his lips before.

The people want a reasonable amount of road racing—road racing of quality, such as the Vanderbilt affair. The attendance at this race indicates the growing interest in a contest teeming with interest and excitement, but at the same time practically devoid of danger when plans are carefully laid and carried out to avoid danger. The mistakes of last year were easily seen and rectified; those of this year have been noted, so that another year even the few accidents to the contestants and their mounts may be avoided and the entire field of starters may be in a condition to finish and thus give the American people a sport full of excitement and at the same time prove of benefit to the maker in the matter of automobile designing and construction.

WHY THIS EFFORT FOR GOOD ROADS?

DOES the great American public want good roads? Does the automobilist, the cyclist, the user of horse-drawn vehicles, the merchant and the farmer want good roads? There has been nothing of a startling nature within the past decade to warrant the belief that good roads are necessary or desired by any but a few enthusiasts, who are rapidly becoming reconciled to the fact that the lack of interest in this most important proposition indicates no desire for improved roads.

The automobiling organizations and the farmers have done nothing worthy of note toward securing better highways; the farmer is adamant; the merchant does not care—all blind to their own interests and their own comforts and pleasures.

The newspapers have been called upon in the past to give the good roads movement support. They have responded to the call generously. It has all been in vain. The little boom that the project had a few years ago died with cycling and has been under ground ever since.

Let it stay there! What is the use of a few worrying out good gray matter for others when others will not turn in and so much as sign a petition to have a bill passed? Why should automobilists and farmers and merchants receive a benefit that is all to them when they take so little interest in a proposition?

It were better that all efforts be laid aside until all classes realize the necessity of improved highways, as they will before many years shall have passed.

A policy which is either unfriendly to or directly against highway improvement is not only a short sighted one, but indicates antediluvian tendencies. Look out for the man who does not favor good roads, be he farmer, merchant automobilist or politician, and particularly keep an eye on the politician, whose judgment may be easily warped.

Digitized by Google

Jump Sparks

Glidden is about to go glidin' again.

Fur suits and anti-freezing compounds will begin to feel rather comfortable in a short time.

Motordom will now stretch its arms, yawn a bit, talk good roads and wait for the shows and the Florida beach meets to break the ennui.

America hasn't lost the Vanderbilt cup yet. It is true France has it, but France is under a bond to run a race for it or to turn it back, so all is not lost.

Now that the Vanderbilt cup race is over, the tourists and the other plain automobilists will come in for an inning. After that the shows and the "entire product sold."

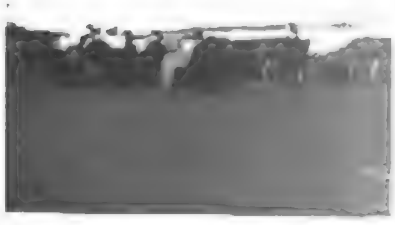
Those who won places in the American eliminating trials and were thrown out will have a beautiful chance to do a lot of sneering at the cup commission the way the Vanderbilt cup race turned out.

A little girl met death in Chicago by being dragged by an automobile, upon which she was hitching. But the automobile received its full share of blame by the Chicago Motorphobia Press Association, just the same.

The crowd at the Vanderbilt cup race was provided with a band, just what for is not known, for while the band was playing to beat itself the contestants in the race were also going to beat the band, as the times made indicate.

It was an obliging act on the part of the Automobile Club of America to furnish a refreshment tent for the women at the Vanderbilt cup race, but what the man who walked wants to know is why were so many men hanging around this particular spot on the grounds?

Out in San Francisco a wholesale grocer had discovered that the automobile has increased the sale of chewing gum 25 per cent. Motorists have been known to chew the rag, but that they should boost the profits of Messrs. Yucatan, Tutti-Frutti, Tolu & Co. to such an extent was never suspected.



Beating the Band on Long Island

Even if the weather man did receive a cussing last spring at the tongues of the American motorists, he has of late been dishing out weather good enough to more than take off all the cuss.

At last a ray of light has penetrated the Cimmerian darkness! On Friday last Adam Newhart, a Bethlehem township farmer, was actually fined $13 by Magistrate Brunner, of Easton, Pa., for refusing to draw his team to one side and allow Clement F. Hill, an eastern automobilist, to pass by!

The Week

France lifts Vanderbilt cup, with America second, Italy third and Germany nowhere; Hemery is winning driver, Heath being runner up; accident robs Lancia of almost certain victory.

Italy makes bid for British trade by opening a Fiat branch in London; radical changes being made in English trading system.

Clifford-Earp, in English Napier, wins Chateau Thierry hill climb in France, average speed being 58 miles an hour; he also captures honors at Dourdan meeting.

Dewar cup event, set for Wednesday, abandoned because of accidents to cars entered.

New York legislature's joint committee starts on 1,000-mile road investigating jaunt.

England reports motor boat racing received setback as result of season's schedule.

Aero Club of America formed in New York to advance science of aeronautics.

Foreign drivers who competed in Vanderbilt race return home this week.

New Jersey experiments with coal tar to make dustless highways.

France has definitely settled that she will have her tire race next year. In the language of the pun-maker, she has retired from the Bennett-Vanderbilt competitions and it will take at least 3 or 4 more years for her to tire of the new fad.

A police officer at Cleveland, O., doesn't believe automobiles are so dangerous as most people do. "We investigate every accident and have found every one to be due to the carelessness of the pedestrians," he is reported as saying. That man stands a good chance to become as famous as the tire-shooting cop of a Chicago suburb—the other way.

Judging by the decidedly yellow tinge given automobile accidents in the Chicago Inter Ocean, there is a difference of opinion between the news editor who knocks the game in the front part of the paper and the man who writes the trade jollies in the pink sheet and solicits advertisements from the makers and retailers on the strength of his soft soap.

Chairman Morrell did a pretty good job at running a race, even if he didn't do a good one in selecting a team.

"To France the cup, to Italy the glory," says the New York Herald. That's the time the hammer whacked the nail on the right spot.

Chicago is still on the automobile map despite the fact she has had no holdups, no bump the bumps or any other eruptions of that sort for at least a month.

No contest was held this week for the Dewar trophy. Only three entries were made. Evidently the people prefer the cup that cheers but does not inebriate.

England is coming to the front again, Clifford Earp having gone over to France and grabbed off a hill climb, just by way of showing France that the little island is not dead.

Motor Age is going to credit Senator Morgan with finding more beach tracks. The senator says Motor Age is at the top of the head of the automobile papers, and this is worth some return.

If a man were to run in front of a locomotive, would the locomotive be blamed for the man's death? How long will it be before the press and the public learn that it is dangerous to run in front of an automobile?

In the Chateau Thierry hill climb Earp, the Englishman, traveled toward heaven at the rate of 58 miles an hour. This is even a faster pace than the most rabid motorphobist in motorphobia-infested Chicago would have the automobile owner travel the other way.

The village of Glencoe, Ill., made famous by placing bumps in the road to prevent scorching, is becoming converted. It proposes to raise the speed limit to 15 miles an hour, but it doesn't show why a fraction over 8 miles an hour was a dangerous speed heretofore and 15 miles a safe speed now. Still, automobilists ought to grin with pleasure at the new turn of affairs and hurrah for Glencoe. They might suggest that other places put in bumps if it will have unreasonable speed limits raised.

"Ladies" Refreshment Tent at the Race

Digitized by Google

EARP BEST IN CLIMB

Englishman, Driving Napier, Goes Up Chateau Thierry Hill at 58.5 Miles an Hour Clip

Paris, Oct. 2—The feature of this year's Chateau Thierry hill-climbing contest was the victory of W. Clifford-Earp on a six-cylinder 100-horsepower Napier. He climbed the kilometer on a 10 per cent grade, with a standing start, in 38⅛ seconds, or at an average speed of 58.5 miles an hour. This performance lowered Rigoly's record, in a Gobron-Brillié, by exactly 7 seconds.

Clifford-Earp's racer is one that ran for England in this year's Bennett race, securing ninth position. He brought it over to France a few days ago, coming down from Havre under his own power and to compete in the two or three races in which he is entered. Stead, on a Mercedes, also marked a faster time than last year's record, climbing the hill in 39⅖ seconds. Faure, with the same make of machine, was slower, taking 46⅕ seconds in covering the kilometer. Pieorn, with a 1903 Mors racer, took 53⅗ seconds, and the Automoto, driven by Lapertot, did not get up in less than 1 minute 7⅘ seconds. Baron de Caters had entered his new Mercedes racer for the hill-climb and was duly started, but abandoned the test before he had covered more than a few yards, owing to his carbureter firing.

Hauriot, in a light Darracq car, entered in the 1,430-pound class, covered the kilometer in 41⅘ seconds, being nearly 9 seconds faster than last year's time; while De la Touloubre, also in a Darracq, weighing less than 880 pounds, climbed the hill in 53⅗ seconds.

The Chateau Thierry event is a brilliant example of the progress made in motoring. In previous years the racing events were run over the mile course, which necessitated the tackling of a rather difficult bend just beyond the kilometer line. With the increased speeds realized by both racers and tourists it was found that this turn, quite safe 2 years ago, was now dangerous, to send the racers and fast touring cars round this bend, and the climb was consequently stopped at the kilometer line for the big cars, although the slower vehicles were allowed to go the full mile up the hill because they could be slowed up before actual danger threatened at the bend.

Touring cars had seven classes provided for them, according to selling price, with one class for touring tri-cars, a motorcycle third of litre class, and competition for trucks. The $800 to $1,600 class and the less than $800 class were run over the mile course, both being won by Boyer cars in 3 minutes 25⅗ seconds and 5 minutes 30⅘ seconds, respectively, which the other events were all run over the kilometer. The fastest time for the kilometer, standing start, was 55⅖ seconds, accomplished by a Panhard touring car with four persons on board, in the $5,000 class. In the $3,600 to $5,000 class a Radia accomplished the climb in 1 minute 4⅗ seconds, being the second fastest time. A Fiat car in the $3,000 to $3,600 class took 1 minute 7⅕ seconds to climb the hill; a Svell 1 minute 40⅘ seconds in the $2,400 to $3,000 class, and a Serpollet 1 minute 13⅕ seconds in the $1,600 to $2,400 class.

General View of Chateau Thierry

Clifford-Earp and His Napier

ON PLAINS OF IDAHO

Tourist Megargel Passes Through Rabbit-Infested Land and Is Lost in Snow Storm

Arco, Idaho, Oct. 11—With the skins of two coyotes, killed on the lava desert, tacked on the sides of the car, the Reo Mountaineer, of New York, pulled into Arco late last night, having successfully withstood the hardships of the 65-mile desert run, without taking on water or getting stuck in the sand hills. The lava plains of Idaho, just covered by the Reo Mountaineer, extend from the Mormon settlement of Moreland, in Bingham county, to the village of Arco, in Blaine county, and are inhabited only by wild beasts, mountain lions, coyotes, wolves, bear, antelope, deer, wild cattle and wild mustangs. Three land-marks in the center of the barren plains are visible for 100 miles. These are three huge piles of earth and lava rocks known as the three buttes—Big Butte, Middle Butte and Little Butte. The trail to Arco runs between Big Butte and Middle Butte and a trail between Middle Butte and Little Butte takes one up the Lost river region, a section of country that abounds in mystery, chief among which is the total disappearance of a large river, which, after running several hundred miles, sinks into the ground and disappears entirely.

At Moreland, where the American Motor League tourists put up, the entire country is suffering from the jack-rabbit plague—a plague that any one of the plagues of Egypt would have been small besides, according to the stories of the Mormons settled there. No sooner is anything planted then the jack-rabbits eat it up. Fences are sunk into the ground to a depth of 3 feet, but the rabbits burrow under them. Dogs are kept in small herds to hunt them down the the country for miles around is strewn with pieces of rabbit fur, but for every one that is killed a dozen spring up to take its place. Regularly organized rabbit drives are held weekly and thousands—yes, tens of thousands—are killed in these drives, but still they increase.

When the Reo Mountaineer came into sight there were rabbits in front of us, rabbits to the right of us, and rabbits to the left of us, scampering in every direction at the approach of the puffing car. Even the dreaded coyote is allowed to roam free over this section, as he lives on rabbit as much as he does on sheep and, as one farmer we passed him on the road during our journey yesterday afternoon expressed it, "every little helps."

We had several invitations to participate in rabbit drives, the farmers even

Digitized by Google

talking of purchasing an automobile and taking off the muffler as a rabbit driver. We spent the night with a Mormon family on the outskirts of the great lava plain. Although the family was one that would have caused President Roosevelt to have thought twice before he expressed his now famous views on race suicide, we were given the best of everything and a bunch of youngsters turned out of bed to make room for us.

Sunday we lost ourselves. It was not entirely our fault, for we were misdirected and not coming to a ranch for some 15 miles, naturally kept on going wrong. When we finally came to an Indian encampment we had difficulty in making ourselves understood, for neither Fassett nor myself are very much up in Bannock Indian talk. Finally we were informed that we could reach Blackfoot by striking off across country and we attempted it, first running north to avoid a butte and then turning south to avoid a rocky mountain peak. We kept turning first one way and then another, fording stream after stream and eventually running into an Idaho snowstorm that stung our faces like needles. By this time we realized that we were lost—hopelessly lost and there was neither ranch nor man within 15 or 20 miles of us. One thing remained, however, and that was to follow our own trail back to Pocatello. This was finally accomplished, we arriving there guided by our searchlight, a little before midnight, having put in the hardest kind of a day and having accomplished nothing.

Arco is a little settlement in the midst of the lava hills, boasting of a store, three saloons, a water tank, pool room and hotel. The latter, strange to say, is well kept and we really enjoyed clean sheets and two good meals, the Jap cook certainly knowing his business.

Gasoline in this section of the world comes in 5-gallon tin cans, sealed. The price ranges from 35 to 60 cents a gallon, according to the greediness of the particular store keeper you purchase from. Gasoline, however, we must have, no matter what the cost, and the store keeper, knowing this, puts his price accordingly. We have arranged a couple of iron loops on one of the side steps of the Reo Mountaineer, on which we carry two 5-gallon cans in addition to the 10 gallons the main tank carries. With this amount of fuel we feel comparatively safe for a 200-mile mountain trip, or a 300-mile run across level country—a species of country unknown in Wyoming, Idaho or Oregon, where our little caravan has all sorts of wild adventures in its search for the best route between New York and San Francisco. While we are enjoying these incidents will welcome civilization again.—PERCY F. MEGARGEL.

MEGARGEL'S ARRIVAL AT THE LITTLE TOWN OF ARCO

FRENCH CARD MADE UP

Race for Tires and Monster Tour of Europe Planned for 1906 By the Automobile Club

Paris, Oct. 5—Three decisions only have been arrived at by the committee of the Automobile Club of France united to consider the program for 1906. France will not compete for the Vanderbilt cup next year, whether it wins or loses this month. A tire competition will be held next year, and a monster touring event of over 3,000 miles through the various countries of Europe will also be organized. No decision was arrived at regarding road racing; indeed the matter was not even discussed and no one can yet say whether an important road race will be run or whether France will abstain entirely from such events, according to her announcement.

The tire competition has been under discussion unofficially for some time. In this novel event it will not be cars that will be entered, but a set of tires or wheels, the competitor making his wheels travel by means of any motor he likes, with, of course, reserves as to weight, and having full liberty to change anything or everything apart fro mthe tires. It is, in fact, an inversion of present methods of road racing, the tire manufacturer choosing his car instead of the automobile constructor selecting his make of tires. An equal number of tires will be allowed each competitor, repairs may be executed by the usual equipment carried on board, but all the tires stamped at the beginning of the race must be presented at the end of the run. It is probable that the event will consist of two daily runs of 500 kilometers each, the complete set of tires arriving first winning the tire competition. The French tire manufacturers all declare that the competition will be one very difficult to organize. Quite apart from the length of life of a tire according to the way in which the car is driven, there is the question of cars of different weights and different builds which will all influence the final result. They also want to know whether a car coming in first on the rim will be placed before a car arriving later with its tires still in good order.

The great touring event has been

A MEGARGEL EXPERIENCE IN IDAHO

brought forward by the Marquis de Dion, vice-president of the club and head of the firm of De Dion, Bouton & Co. The marquis has little love for road racing, but he is wildly enthusiastic on touring and industrial vehicle competitions. It is his opinion that existing touring tests are not of a sufficiently exacting nature. Any car can cover a distance of 600 miles, but the automobile that will run from Paris through France, Italy, Austria, Germany, Belgium and back home will indeed be worthy the name of a touring car. Preparation on a gigantic scale will be necessary to make such a tour successful, but when once the Automobile Club of France has pledged itself to organize any event it is not deterred by any surmountable difficulties and will push through to success, for the makers here want to show the world that they can duplicate their successes in the Bennett race when it comes down to touring. If they can draw under their banner motorists from all sections of the globe will rest content.

Digitized by Google

FIAT FINDS FOOTING

Italian House Founds British Company—Radical Changes in English Trading System

London, Oct. 7—The process of preparing in grim earnest for the expected struggle for the English market is developing with something like rapidity. The Fiat concern, of Turin, has formally founded a British company with headquarters in Long Acre, London, to handle and market these cars only. The French firms of Brouhot, Chenard-Walcker, Gobron-Brillie and Mors have also taken this step, while Panhard & Levassor, Clement, Gladiator, Mercedes, Richard-Brazier and Peugeot already have had their sole agents in England, most of these controlling the trade for the British colonies also. On the other hand, British firms are also endeavoring to employ retailers who can have no other interests to push. The day is fast passing when one retail firm can offer its customers any one of a dozen or so leading makes—from the catalogue. Customers now want to see the actual car they are asked to purchase, or a duplicate, and as some of these are costly and not free selling, the stock necessary to handle more than a couple of agencies is more than most firms can lock up in this manner.

Another tradition which is passing away is the necessity to put down one-third of the purchase money with the order and then wait 3, 4 or 6 months for delivery. That was originally instituted by the French manufacturer as "earnest money" to be forfeited if the bargain remained uncompleted. Then it developed into being an insurance of delivery in turn, but now it is being kicked against, and so British firms are able to accept the orders of their customers without stipulating for any deposit it is certain that the French trade will in the end also lose this form of capitalization. It has been stated that about a year or so ago £3,000,000 of the customers' money was lying in the banking accounts of a few of the leading automobile firms as deposits on cars, many of which could not be delivered under from 6 to 7 months. Of course, reforms of this nature are not being effected without a struggle, but the advent on the scene, and his importance to the trade, of the man of strictly moderate means has had its effect. The motor trade now requires more capital than ever to run it and infinitely more sound commercial management than it has, with but few exceptions, received.

One matter upon which firms of standing have long taken a firm position and which has helped to build up the trade of less scrupulous concerns has been the system of blackmail by chauffeurs which we imported from France among our automobile manners and customs. It is customary for many firms to give the wideawake, i. e., dishonest, driver a commission on all the business he brings these firms, consequently he is keenly on the lookout to divert trade from firms that do not subsidize him in this way to firms which do. The firms which make this business policy, of course, recoup themselves out of the proprietors of the cars, often with heavy profit, sometimes by transactions which would not stand legal investigation. The evil is a great one, not so much from its cost as because it leads up to baseless dissatisfactions with honest traders and the glossing over of real faults—all making for the hindrance of automobilism. Like the social evil, it is perfectly understood but seldom alluded to. The Argyll company, of Glasgow, however, has taken the bull by the horns in the matter on opening a new and extensive depot for its cars in the west end of London, which is being run by a separate company formed to exploit the Argyll car only. In large and flaring advertisements they announce that under no circumstances will a tip be given to a chauffeur, but no doubt in order to maintain his good will they propose to give a prize of £5 and a certificate to every driver who runs an Argyll car, purchased from this subsidiary concern, for 5,000 miles at an inclusive cost for gasoline, oil, grease, tires and car repairs rising from £42 for a 10-12-horsepower car up to £62 for a 24-30-horsepower vehicle. This is not a bad idea, as it seems to fix a standard of economy which will keep the chauffeur's wits alert to maintain and which is low enough to entice purchasers to the Argyll depot. But it is no cure. The dishonest driver will not worry over a £5 note for 2 or 3 months' work when he can get as much from his pet retailer for the simple asking. To the honest chauffeur it will be an incentive, however, for the certificate alone will be of great assistance to him in obtaining fresh employment in his profession.

ROAD INVESTIGATING JAUNT

New York, Oct. 17—A thousand-mile journey by the joint committee on good roads of the New York legislature will begin at 8 o'clock this morning, starting from the Murray Hill hotel, with the first day's run terminating probably at Lenox, Mass. Senator W. W. Armstrong is the chairman of the committee, but he will not be able to join the party until the latter part of the week. The tourists include Senators Allds, Malby, Warnick, Keenan and Grady and Assemblymen Hooker, Merritt, Moreland and Cook. State Engineer Van Alstyne will also be included in the party, which at Worcester will be met by W. E. McClintock, chairman of the Massachusetts state highway commission, while later in the journey at Hartford State Highway Commissioner MacDonald, of Connecticut, will be another addition. Chairman Morrell, of the American Automobile Association racing board, who is an enthusiastic tourist, will be the pathfinder of the expedition, and will drive his Locomobile. A. W. Church with a Decauville, Walter White with a White steamer and Robert E. Fulton with a Pope-Toledo, will be the other pilots.

DEWAR EVENT POSTPONED

New York, Oct. 17—Senator Morgan has had to abandon the proposed running of the race for the Dewar cup at present. It was set for tomorrow morning in the Coney Island boulevard. The Ford had broken a shaft in practice, and Keene, Christie and several of the foreign cars had been put out of commission by Vanderbilt cup race accidents.

COAL TAR FOR ROADS

Experiments with French Methods of Making Dustless Highways Are Held in New Jersey

Washington, D. C., Oct. 14—Coal tar for use in highway construction in the United States is being brought to the attention of the good roads advocates of this country, it being claimed that a road treated with the tar is dustless, noiseless, will not side wash, will resist wear and always presents a smooth, uniform surface. France has been using the tar for several years in the construction of her highways and since the attention of Americans has been called to the fine points of this tar road makers' experiments have been made in this country which so far have been reported satisfactory. It was the Hon. Robert P. Skinner, United States consul general at Marseilles, France, who called the attention of the government to this use of coal tar through the medium of a special report, which has been published by the department of commerce and labor in the daily consular reports, No. 2073 issued by the government.

In this report Mr. Skinner describes the methods used by Road Commissioner Girardeau, of Fontenay-le-Comte, who has written a complete pamphlet on the subject containing much that is of pertinent interest to those interested in good roads and the suppression of germ-carrying, comfort-destroying dust that is so prevalent on the majority of even the best highways in America. Mr. Girardeau states that he was prompted to experiment with coal tar on road surfaces, through frequently noticing that where tar had been accidentally spilled on the road it left inextinguishable black stains. The road was preserved longer in these spots than anywhere else and the black stains soon appeared in relief. The first experiment made was in July, 1896, on the road from Sucon to Aiguillon-sur-Mer. The tar was spread on cold and covered with dust of the road. The result was decisive. Two years after this experiment the tarred part was 2 centimeters higher than the balance of the road. This much frequented road is flat, covered with a quartzitic material, and established on clay. The success of this experiment led to a number of others, all of which were eminently satisfactory. Since 1898 it has been recognized as advantageous to use hot tar.

Two notable examples of the use of coal tar on American roads are cited by good roads advocates. The first test was made on a section of macadam road at Westfield, N. J., in September, 1903, and the other at Montclair, N. J., just a year ago. The French system was used at Westfield, the only variation being that fine screenings were spread on the surface after tarring instead of a sand, as is used abroad. Owing to the lateness of the season the conditions were unfavorable. The road operated on had not been refilled for several years, and was given but a superficial sweeping before being treated. An examination of this road a year later showed that the treatment was satisfactory, it is claimed. The center of the road, on which fairly clean screenings had been used on top of the tar, was in per-

Digitized by Google

feet condition, the surface being as hard as the ordinary concrete tarred walk and as smooth as a floor. On the side of the road there had been some wear and a consequent accumulation of dust. It was held that this road should be treated at once and repeated every 2 years after, only using half the amount of tar as in the first two operations at the outset.

The experiment at Montclair was conducted by Malcolm H. Smith, superintendent of road and sewers, 1,000 feet of macadam road being treated with the tar. It was not until the last 500 feet were reached that the operation could be conducted in a regular manner so that a basis for an estimate on labor, tar and stone could be made. This demonstrated that the road could be treated with tar at a cost of 18 cents per lineal foot, 16 feet wide, the various items being as follows: Material, nine barrels of coal tar, $45; four loads, 7 yards dust, at $1.90, $13.30; labor, 2 days, for tar, $8; labor, 5½ days, men at $1.50, $8.25; labor, 2 days, foreman, $5; labor, 2 days, 10-ton steam roller, at $5, $10; total, $89.55.

One of the great difficulties that had been experienced there outside of the dust was the washing of the roads, owing largely to the steep grades on many of the streets. It was largely to overcome this, as well as lessen the regular wear and tear that this experiment was made. At the time this work was first inspected, about 600 feet had been completed, which took between 13 and 14 barrels of tar.

PURDUE TO TEST POWER

Lafayette, Ind., Oct. 16—The new automobile testing plant in the mechanical engineering department of Purdue university is now nearing completion, and within a few weeks the experiments will begin. The object of the new department of experimental engineering is to test for the consumption of fuel, horsepower delivered at the wheels and general efficiency of the machines under examination. The automobiles which will be delivered in running order at the university will be mounted on a stationary platform with the rear or driving wheels on a truck which is stationary in one sense, but which revolves with the wheels of the motor car. To this truck is attached a dynamometer for measuring the power developed and a brake horsepower device, which measures the net power output or power delivered to the truck. This, with the amount of fuel consumed in a given time, will give the general efficiency of the machine. The work of erecting and equipping the department is under the supervision of O. C. Klipsch, who was formerly with the General Electric Co. He succeeds Professor McColl. The automobile testing plant will eventually be turned over to seniors in the school for mechanical engineering, who will conduct these tests for their thesis work. They will test the various makes of steam and electric motor cars, and in testing the electric cars they will have the co-operation of the electrical engineering department. Automobiles for testing have been promised by the leading manufacturers in the country. When the plant is completed it will be in charge of Professor C. A. Young, O. C. Klipsch and W. O. Teague, all experienced men.

EARP IS AGAIN STAR

Englishman and Napier Capture Honors at Dourdan—Cissac is Motor Cycle Hero

Paris, Oct. 9—Dourdan, although not now one of the most important of French meetings, is still an official circuit, recognized by the Automobile Club of France. Faster times are done elsewhere, and despite its officialism, Dourdan will probably in future have to give way to more rapid tracks. Yesterday's races resulted in a victory for Clifford-Earp in the six-cylinder Napier car, the Peugeot doing well in the motor cycle class, and the Darracq in the light car class.

Earp did the standing mile in the heavy car class in 53 4-5 seconds and the standing kilometer in 25 3-5 seconds. His nearest competitor was Faure in a Mercedes, who did the mile in 1 minute 8 4-5 seconds and the kilometer in 34 3-5 seconds.

Hanriot romped away with the event for light cars weighing from 880 to 1,430 pounds, doing 1 minute 3 2-5 seconds and 29 2-5 seconds for the mile and kilometer respectively. De la Touloubre, in a Darracq, won the race for light cars weighing from 550 to 880 pounds, his mile being done in 1 minute 13 1-5 seconds and the kilometer in 38 1-5 seconds.

In the competition for motor cycles weighing from 110 to 550 pounds Guippone, on a Peugeot, won with 57 seconds for the mile and 28 seconds for the kilometer. Buchet, on an Anzani, was second in 1 minute 8 4-5 seconds and 34 2-5 seconds, and Chauret, on an Aleyon, third in 1 minute 36 4-5 seconds. Cissac, on a Peugeot, did the flying mile in 53 1-5 seconds and the flying kilometer in 27 3-5 seconds in the class for motor cycles weighing less than 110 pounds. Champoiseau, on a Peugeot, was second in 59 seconds and 28 4-5 seconds; Guippone, Peugeot, third in 1 minute 1 1-5 seconds and 28 4-5 seconds, and Anzain, on a Buchet, fourth in 1 minute 10 2-5 seconds and 34 1-5 seconds.

It is interesting to note that the time of the six-cylinder Napier for the flying kilometer is exactly that of the two-cylinder Peugeot motor cycle ridden by Cissac at the Blackpool, England, meeting a short time ago, namely 25 3-5 seconds. Yesterday Cissac rode the motor cycle on which he established his world's record at Blackpool.

Tourists were provided for in nine classes. The Peugeot, with Guippone as rider, again won in the motor cycle class. A Berliet car, with Bablot as chauffeur, was the fastest of all the four-seated cars, covering the standing mile in 1 minute 12 seconds and the flying kilometer in 35 4-5 seconds.

NOW FOR HIGHER SPORT

New York, Oct. 16—The Aero Club of America was formed at the A. C. A. tonight and the following officers elected: President, Captain Homer W. Hedge; first vice-president, John F. O'Rourke; second vice-president, Charles J. Glidden; treasurer, Augustus Post; secretary, S. M. Butler.

The club was formed to advance the development of "the science of aeronautics and kindred sciences and to encourage all kinds of aerial navigation, conferences, congresses and races," to quote Captain Hedge. The club has already been officially recognized by the Aero Club of France and the Aero Club of the United Kingdom. Negotiations are now under way to secure recognition by the Aero Club of Germany and similar bodies in other foreign countries.

Courtland Field Bishop has been appointed the representatives of the Aero Club of America at the International Congress of Aeronauts, which is now in session in Paris. The club already has nearly the full complement of founder members. Among those who enrolled last night were:

Dave H. Morris, Charles J. Glidden, John F. O'Rourke, John F. Carroll, Samuel T. Davis, Jr., Thomas L. Watson, Robert Lee Morrell, Cortland F. Bishop, Augustus Post, Homer W. Hodge, S. M. Butler, A. G. Batchelder, Robert Scott, A. L. Riker, Alan R. Hawley, Norman F. Cuntz, William Hawley, Emerson Brooks, C. T. Adams, Harry J. Everall, Orrel A. Parker, George P. Butler, William H. Butler and A. H. Whiting. Most of them are prominent motorists.

SIDDELEY IN THE SADDLE

London, Oct. 4—The fusion of the Wolseley and Siddeley automobile companies has been accompanied by the resignation of the general manager of the former and the sole control of the management is now in the hands of J. D. Siddeley, who is a Dunlop Tire Co. man who was early in the automobile field and had the good fortune to enlist the support of one of the Rothschilds, who had become an ardent motorist. Mr. Siddeley's commercial success was primarily due to the fact that he induced the Wolseley company to build his cars after his own idea. The company had gained a high reputation for reliability in public competition and in the hands of private individuals. But their cars were fitted with horizontal engines, and Mr. Siddeley's astuteness arose from the fact that he induced the Wolseley firm to build him a vertical-engined Wolseley, which not only sold and went well, but commanded better prices than the Wolseley cars. His success was so apparent that after 8 years' trading Vickars Sons & Maxim, who own the Wolseley company, bought in the venture and trade under both names.

CHIEF KNOWS WANTS

Washington, D. C., Oct. 12—The house warming and smoker of the new Automobile Club of Washington at the Villa Flora club on the evening of October 9 brought together the largest bunch of automobilists the capital city has ever seen. More than 100 cars were parked on the lawn. Major Sylvester, chief of police, who was one of the speakers at the banquet, made a hit with the crowd when he suggested in the course of his remarks that all vehicles should be marked with a number and carry lights at night, the same as automobiles. The police regulations will no doubt be shortly amended to so include all vehicles in these particulars. Judge Kimball pointed out where many automobilists unwittingly violate the regulations.

Digitized by Google

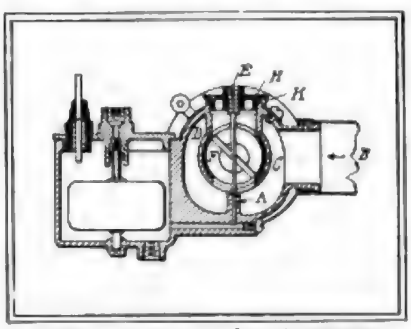
A New Reo Model

AUTOMOBILE DEVELOPMENT

THE REO 8-horsepower runabout for 1906 is a single cylinder machine with horizontal motor, two speed and reverse planetary transmission, single chain drive and possesses several minor points in construction such as trussed axles, pivotal rear springs and easily repairable radiator that are meritorious.

The angle steel side pieces in the frame are braced together by angle pieces in several places and one heavy arched channel piece carries the cylinder end of the motor. In the spring suspension full elliptics in the rear are pivoted at the top on the ends of a cross shaft made rigid with the frame pieces, and radius rods, also pivoted at each end, extend from the axle casing to brackets on the frame just behind the line of the crankshaft bearings. The front springs, three-quarter elliptic, have the upper leaves bolted direct to the bottom part of the frame angle, the bolts passing through the ends of the leaves. The long leaf in the bottom part of the spring instead of being shackled at the rear end to the frame is made into a loop about 4 inches long and 1 inch wide and through this loop is the supporting bolt, held in place by a bracket on the frame. Surrounding the bolt is a flat coil spring similar to a Hyatt roller bearing, for eliminating all friction occasioned by the spring movement. The method of support is exactly similar in its action to a sliding block with a roller bearing. The front axle is tubing, with jaw steering knuckles secured at the ends and a truss rod fastened to the lower part of the jaw and passing beneath posts on the bottom of the spring seatings for assisting in supporting the axle. The rear axle is of the divided live type, with a spur gear differential in the center, the bevels on the differential being rigid with their respective halves of the driveshaft. Double truss rods, one passing beneath the center of the differential casing and the other slightly to the front, aid in carrying the axle. Long roller bearings at either side of the differential casing carry the drive shafts and above each is an oil cup for lubrication. The road wheels are 28 by 3 inches, pneumatic tires of standard make being the regular equipment. The tread is standard, the wheel base 78 inches and the weight approximates 1,100 pounds.

The motor, carried on the left side of the car, with the head beneath the footboard and the crankcase under the seat, has a bore of 4¾ inches and a 6-inch stroke, generating its rated power at 1,000 revolutions per minute. The support is through two cross pieces of the frame, an arched channel piece near the cylinder head, to which the cylinder is suspended by bolts, and at the rear the case itself terminates in a broad leaf, which is bolted to an angle cross piece. The cylinder is an integral castings, with the crankcase open at the ends and bearing plates bolted thereon. The valves are in the top part of the cylinder head, the inlet at the right and exhaust at the left. Both are mechanically operated from a camshaft carried in the top part of the crankcase, a peculiar feature is the shape of the crankcase owing to the push rods being enclosed, and a further precaution is taken by having a metal cap fit over the valve stems and springs for excluding the dust. The cap is held in place by a thumb screw. The valves are removable through inspection holes in the cylinder head, the inspection caps screwing in place. The crankshaft carries a couple of balance weights and revolves in bronze bushings. In the illustration of the vertical section of the motor and transmission gear it can be noted that the crankshaft is continuous from the left side of the crank case to the outside of the gear case, answering as a shaft for the gear case as well. Both motor bearings are long, that next to the flywheel being slightly the longer.



VERTICAL SECTION OF REO CARBURETER

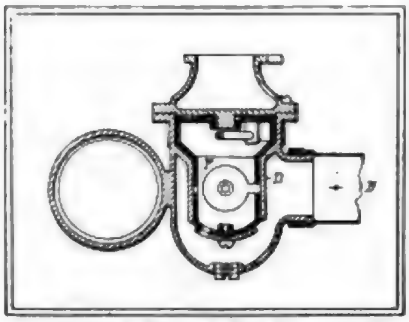
The new Reo carbureter follows the design of separate float chamber, the float stem carrying a needle valve on its upper end for controlling the entrance of gasoline from the fuel tank, and having in one side of the top of the chamber a flushing rod, held up from the top of the float by a coil spring but the tension of which is easily overcome by the pressure of the hand on the end of the rod. The mixing chamber is a cylindrical space with the spraying nozzle slightly raised from the center at the bottom, the air entering through a screened opening at the side opposite the float chamber and the mixture passing to the motor through a throttled opening horizontally placed at right angles to the air inlet. The carbureter is so adjusted that when the motor is not running the gasoline in the spraying nozzle rises to 1-32 inch lower than the top of the nozzle. The air entering through B fills the ring-like space C, within which is a casing D for carrying the barrel-shaped throttle F with a circular opening surrounding the spraying nozzle and another diametrically opposite to it for controlling the passage to the motor. When the throttle is wide open, these openings are one above the other, the throttle one on top, but with reduction in speed, the barrel being turned, the air opening around the nozzle is reduced until a mere slit in the barrel for the needle valve remains and a similar slit permits mixture passing to the motor. In the end of the barrel is an adjustment disk for admitting more air within the barrel than that passing the nozzle and thereby giving additional air without increasing the suction around the nozzle and drawing out too much mixture. This disk can be adjusted from the outside of the carbureter casing. The ease with which the needle valve in the nozzle can be adjusted is a feature of the carburation scheme. The stem E terminates without the casing in a circular plate H with toothed edges and by turning the plate to right or left the needle is lowered or raised within the nozzle and the flow of gasoline restricted or increased. In order to hold the plate in its proper position a spring K is arranged to enter the teeth on the plate and retain it against turning. The carbureter is attached direct to the inlet valve opening, all piping being dispensed with. Air is taken in through a short horizontal screened pipe.

Ignition is by jump spark, the spark plug being placed horizontally in the cylinder head. Beneath the bonnet are two sets of dry cells, and on the dash is a vibrator coil and a two-way switch. The timing of the spark is controlled by a horizontal lever on the steering column. For lubrication there is provided a large glass oiler on top of the cylinder. The oil passes into the crankcase and is distributed by splash.

Digitized by Google

The transmission system consists of a two-speed planetary transmission. To the right of the flywheel is the sprocket A for chain drive to the rear axle. The sprocket is not rigid with the shaft B but attached to the sleeve C carrying the gear D. In the center of the gear case is the drive gear E keyed to the shaft and through which the drives are gained. For the high speed ahead the high speed cone M is forced within the dogs N, forcing them asunder and at the same time locking the entire gear case with the shaft giving direct drive. The spring O assists in releasing the clutch. For slow speed ahead the inside band is brought into use and the drive is through the gear E to F and through G to D and D being on the same sleeve as the sprocket A the drive is complete. The different speeds are gained through the use of the side lever and a foot pedal, the former in its forward position giving direct drive and slow speed when back, with the neutral midway. A pedal is used for the reverse. All gears within the case run in oil, oil cups being provided for that purpose.

Motor cooling is by water circulation maintained by gear driven pump on the left end of the crank shaft. The pump connects with a pipe from the water tank beneath the bonnet and with another running to the water jacket near the exhaust valve. From the top of the radiator is a pipe connecting with the tank and the bottom of it is piped with the valve port adjacent to the inlet valve. The radiator consists of horizontal flat tubes arranged in sets of four and with a dozen sets. Viewed from the front the radiator looks like so many single flat tubes running from side to side and joined at the ends, but a look shows that what appeared as one tube is in reality four tubes side by side, each connecting in the same cross tube connection at the ends. These four constitute one set of tubes and the twelve sets are placed one on top of the other with connections between the sets made at the



HORIZONTAL SECTION REO CARBURETER

cross tubes in the end. The connections are made so that it is easy to take one set out should a pipe in it become damaged and the remaining pipes would then work equally as well, the feature of its construction being this method of taking out injured tubes when on the road and then proceeding with a perfect radiator. It forms the front of the bonnet.

The steering is through a Brown-Lipe irreversible worm gear with the rod connecting the knuckles passing behind the axle. The muffler, of Reo design, is long and cylindrical, hung lengthwise at the right side of the cylinder, the front end so close to the exhaust valve that only an elbow of piping is used for connecting them. A cutout is provided. Two band brakes are provided on the rear hubs, being the only ones used. They are double acting and applied by pedal. A small pedal for compression relief to be used in cranking is also furnished.

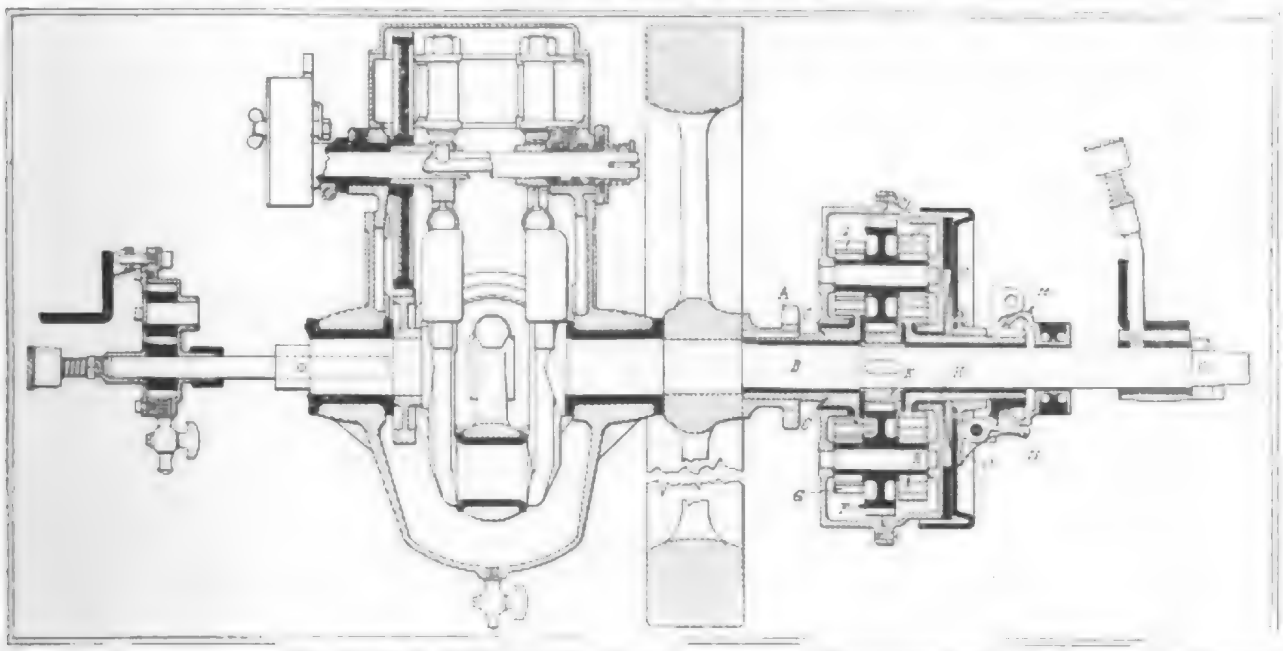
The body work is finished in green with light running gear. The individual seats are heavily upholstered and the back platform is removable and ordinarily carries a half oval-shaped carrying compartment, the latter, however, is removable and in place can be attached a platform for a folding gear seat giving the runabout a carrying capacity of four. When folded the seat does not interfere with the general lines of the machine. The bonnet is held in place by four thumb screws but has side doors for reaching the battery and a top one for filling the water and gasoline tanks. The headlights are attached to it and removable with it, removal only being necessary when repairing the radiator or tanks.

The speed change lever does not extend to the footboard, but works on a shaft beneath the seat, connecting rods being used between the shaft and the bands around the transmission drums. Very small fenders are used over the rear wheels.

The Reo company also has ready for 1906 its 16-horsepower, two-cylinder car, with the motor placed lengthwise in the center of the car. The machine has accommodations for five passengers, has double side entrances, 90-inch wheel base and weighs 1,550 pounds.

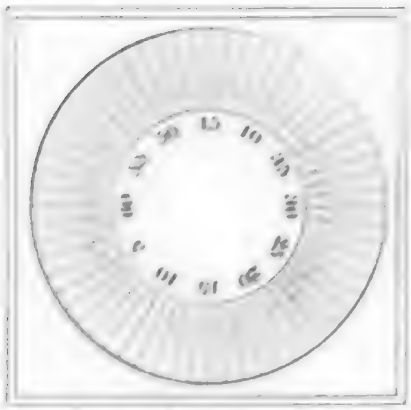
NEW MITCHELL MODELS

Four models are included in the 1906 line of the Mitchell Motor Car Co., of Racine, Wis. Two of these, an 8-horsepower, two-cylinder runabout and a 20-horsepower, four-cylinder touring car, are last year's machines with some changes, and innovations as well, but the other two are new ones. The smaller one is a four-cylinder runabout to be rated at 14 horsepower, with cylinders with a bore and stroke of 3½ and 4 inches respectively. The other is a 28-horsepower touring car driven by a four-cylinder, vertical motor. In all of these models no radical changes are to be found, but such alterations as new radiator design and changes in the shape of the hood improve the appearance considerably. Such construction as pressed steel apron extending from the front of the car to the rear of the transmission, protecting all working parts, is new. A foot accelerator is used for controlling the speed of the car and the transmission has been improved by more carefully finished parts, greater attention to lubrication and



WATER PUMP — VERTICAL SECTION REO HORIZONTAL MOTOR — TRANSMISSION SET — AXLE BEARING

Digitized by Google



Inside Cards of Bullard Speed Recorders

other ways. In addition to its general pleasure use the company is pushing through over fifty of its light trucks and delivery wagons. Bodies in two styles are being fitted to these, one intended for express work and with the seat placed high in front directly above the engine, and the other an enclosed delivery with the seat in the rear of the motor, which is covered with a bonnet as in the touring cars. The company during the coming season is arranging to put out 100 of the two-cylinder runabouts, 300 of the four-cylinder runabouts, 200 of the 20-horsepower cars and the same number of the larger touring machines.

RECORDS ALMOST EVERYTHING

A speed recording instrument which records on a disk of paper the speed a car travels and the exact minute of the day at which the speed is made, should be a good weapon of protection against the ready timing police officials who swear by stop watches against all comers. Such an instrument is marketed by the Reading Automobile Co., of Reading, Pa. J. H. Bullard is the inventor.

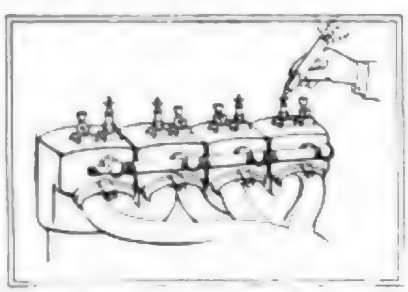
The device consists of a clock like movement, with other appliances, which are connected to the sprocket on the driving wheel of the automobile. The device carries a circular paper card on which, while the car is running, is noted a record of the speeds made and the hour at which they are made. The marks made on the card are perforations. Four perforations represent a mile traveled and as each fourth perforation is heavier than the intervening ones it is easy to read the number of miles. The card has fourteen concentric circles, with twelve intervening ring like spaces. Each ring like space represents 1 hour. The ring like spaces are divided by sixty radial lines into as many spaces, each space representing 1 minute. Within the inner circle are the figures 5, 10, 15, etc., up to 60, representing the minutes in the hour, as on a clock face. The card is secured to the clock mechanism so that as the hands of the clock revolve so does the card, but the perforating needle remains stationary and makes a perforation in the card at the end of every ¼ mile. The card with its twelve ring like spaces and each divided into sixty spaces represents 12 hours and will register for that period. The record of the first hour is shown in the outer circle of spaces and that of the 11 succeeding hours in the spaces towards the center of the disk. Arrangements are made so that at the end of each hour, or when the perforating needle comes to the line marked 60, it passes into the next ring like space.

The card illustrated represents an actual journey from Worcester to Springfield, Mass. The reading of the record is accomplished by placing it with the figure 45 at the top and then looking at the outer circle of perforations or dots. The start was made at 47 minutes past the hour, represented by the circle carrying the dots, which, if the disk had been attached to the clock at midnight, would mean at 47 minutes after 7. The first puncture was 1 minute later. The card not being set correctly in the instrument the stylus changed into the next inner circle at the left of the 55 line instead of at the left of the 60 line. This makes the first puncture at the left of the 55 line as the beginning of another hour. By following the dots in this circle the performance of the car during the first hour of the trip can be found. With one dot in a space, each space representing 1 minute and each dot ¼ mile, the speed of the car was 15 miles per hour and practically 14 miles were made in the hour, there being that number of heavy dots. In the last part of the journey, two dots are shown in each space between the figures 25 and 45 or in a period of 20 minutes showing the speed to be 30 miles per hour. With three dots in each space the speed would be 45 miles per hour and with four in each the machine would be running a mile-a-minute clip. The record shows the distance, found by counting the heavy dots, to be 50½ miles between Worcester and Springfield.

When a stop is made with the automobile the instrument ceases to perforate the card, which continues, however, to revolve and the length of the pause can be calculated by counting the number of non-perforated spaces between the last perforation when the stop was made and the first one when restarting. The instrument because of this feature could be used to advantage on livery and delivery wagons where the owners would want a record not only of the speeds made, the times in which they are made, but the length of stops and when they occurred.

NOVEL SPARK TESTER

Discovering if a charge of gas is firing properly without removing the spark plug or in any way interfering with the wiring of the motor is what the Smith spark tester, a product of the Duck Brake Co., of New York City, is designed to accomplish. The Smith tester is a little tubular



How Smith's Spark Tester is Used

Front View Bullard Speed Recorder

device, lead pencil-like in shape, with the pointed part insulated and the handle part a brass tube, in which flashes occur when testing a cylinder. The tester does not follow the construction of a spark gap or intensifier but is claimed to be scientifically constructed with the object of not injuring the coil when used in making a test. To test a plug the tester is placed on the end of the spark plug or any uninsulated portion of the secondary wiring or coil and a bright flash will be seen in the tube each time a spark takes place on the sparking ends of the plug. The tester is held in the hand when being used and the variations in the spark or flash within the tube indicate peculiarities of the spark within the cylinders. If no flash occurs when the tester is on the top of the plug the porcelain may be injured or the points sooted. Flashes of too great intensity are interpreted as due to imperfect condition of the contacts of the commutator, continual flashes indicate a weak battery, poorly adjusted vibrator, defective coil, leak in the secondary wiring or the sparking points of the plug too close together, and a light shock, experienced by the person holding the tester, could be traced to a too wide spark gap at the end of the plug or an excessive amount of battery. Persons susceptible to electric shocks can avoid such by connecting the brass tube of the tester by means of wire to any part of the metal work of the car. The maker claims to be able to make use of the tester in adjusting the coil vibrators by placing the insulated point of the tester on the terminal of the coil leading to the spark plug while making the adjustment, the best point being when the brightest light appears in the tube.

HOLLEY'S NEW CARBURETER

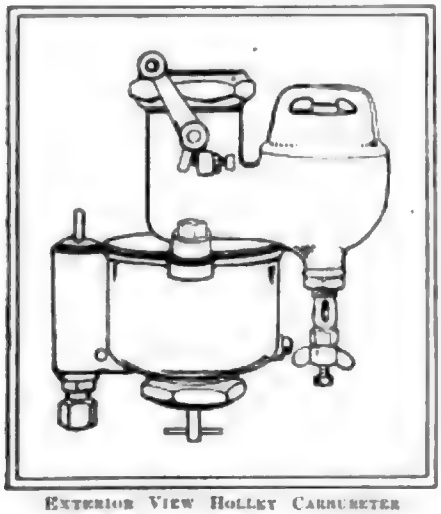
Model E, the 1906 carbureter manufactured by Holley Bros. Co., of Detroit, Mich., possesses as its leading features a cylindrical float, with the spraying nozzle in the center; a spring controlled compensating air valve for use on high motor speeds, and either a horizontal or vertical outlet for connecting the pipes to the motor, making the carbureter well adapted for either horizontal or vertical motors.

Viewed from the outside the carbureter consists of two parts—a circular float chamber at the bottom, with a slight expansion on one side for containing the needle valve, and an upper casting, slightly

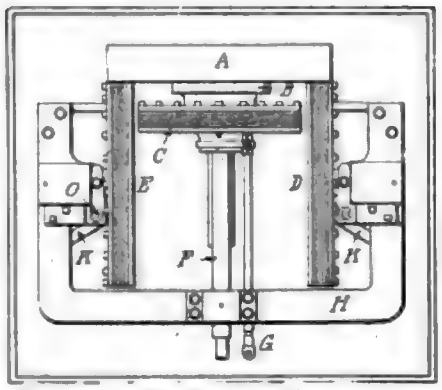
Digitized by Google

U-shaped, with the exit to the motor at the top of one arm of the U, the compensating air valve at the other and the union with the float chamber at the bottom. Air enters through A, a passage which is always open, mixture passes to the motor through the exit B, additional air enters through C, the pipe E connects with the gasoline tank and L is the needle valve for regulating the flow of gasoline and is controlled from the float D through the medium of the lever H fulcrumed at T. As gasoline enters, the float rising as a consequence, allows the lever to trip on its fulcrum, which permits the needle L to lower, closing the passage and stopping the entrance of fuel until that within the float chamber is consumed, when the float lowers, and resting on the lever, lowers one end of it, at the same time raising the opposite end attached to the needle valve and opens it. The union E from the gasoline tank slides into the bottom of the carbureter casing, some packing is used and the packing nut S is screwed in place, a construction permitting the removal of the carbureter with comparative ease. The rate of flow of the gasoline through the spraying nozzle is controlled by the needle point on the upper end of Q, a few turns of which to the right will shut off the entire flow of fuel and a turn or so in the opposite direction will give the required amount of fuel On the bottom is a cross head for facilitating its adjustment.

The mixing chamber M is considerably restricted at the nozzle and a short distance above, and beneath the nozzle, is shaped cone-like, causing the inrushing air to focus practically at the top of the nozzle, the meeting currents of air practically atomizing the gasoline. Directly above the nozzle and in the top of the mixing chamber is the exit to the motor controlled by a throttle, the lever R being for connecting the throttle either with governor or lever on the steering wheel of the car. At slow motor speeds sufficient air enters through A to satisfy the motor, but with speeding the suction of the cylinders is beyond the capacity of A and the compensating valve N begins opening, the motor suction being sufficient to overcome the tension of the spring O, which holds the valve on its seating. The adjustment of the valve is one of the features of it.



Exterior View Holley Carbureter



Detail of the Gearless Transmission

When too weak mixture is obtained the thumb nut P is loosened and the screw raised thereby restricting the maximum opening of the valve, the bottom of the valve stem coming in contact with the top of the screw.

A GEARLESS TRANSMISSION

Friction transmission of power from the motor to the driveshaft in an automobile has a new exponent in the Gearless Transmission Co., of Glen Falls, N. Y., which has a type in which a clutch is used within the flywheel to flexibly connect the crankshaft with the driveshaft for direct drive on the high speed when the friction wheels are not used and do not even revolve. On the back face of the flywheel A is the band clutch B, so designed that it can by means of a pedal be made to connect the driveshaft F with the crankshaft carrying the flywheel and at the same time the friction disks E and D are moved away so they are neither in contact with the friction wheel C or the face of the flywheel A. This makes the direct drive the same as in a car with a sliding, planetary or individual clutch transmission, friction wheels not being used in the transmission of the power.

For all speeds other than direct drive the friction disks E and D have their peripheries in contact with the back face of the flywheel near its periphery. This causes the disks to rotate in opposite directions, being in contact with points on the flywheel diametrically opposite to each other. Between the disks is the friction wheel C, splined on the transmission shaft F. The wheel can be moved backward or forward through the medium of the shifting rod G. The periphery contacts with the faces of the friction disks, the latter being at opposite sides of it, and, revolving in opposite directions, impart movement to the wheel in the same direction. With the wheel in the position shown in the illustration—that is, contacting with the friction disks near their periphery—the fastest speed other than direct drive is obtained, and as the friction wheel C is pulled backward closer to the axes of the friction disks the speed of the same is reduced until in line with the axes, when it will be motionless and when in the rear of the axes a reverse speed is obtained. Contact between the disks and the friction wheel is gained by moving the disks against the wheel, accomplished by the pedal levers K, of bell crank shape, pivoted at O and with one end attached to a yoke working on a collar on the disk shaft and the other end connected with the pedal on the foot board. When traveling on all speeds other than direct drive the band clutch in the flywheel is withdrawn. The friction wheels are carried on the framework H, of rectangular shape and designed to be bolted to the side pieces of standardly constructed car frames.

MOTOR CAR LITERATURE

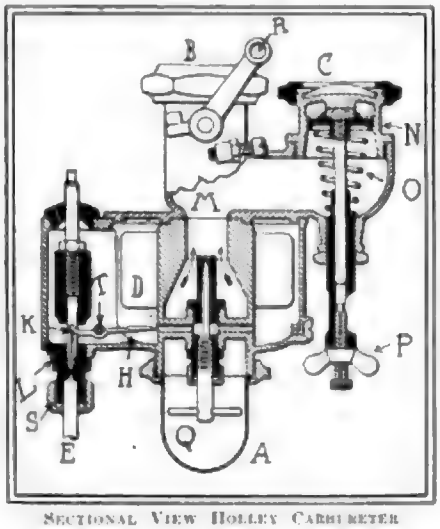
"What They Say About Us" is how the J. Stevens Arms & Tool Co., of Chicopee Falls, Mass., names a booklet that is filled with letters from users of its machines. In the last few pages are given full mechanical details of the cars made by the concern.

"Positive Proof" is what George Crane, manager of the Knox branch in Chicago, calls a little book he is distributing in the interest of Knox pleasure and commercial cars. The book lists the different machines and has several pages of letters of commendation on them.

"Frenzied Jack Sense," published for everybody by the Duff Mfg. Co., of Pittsburg, Pa., tells in decidedly blank verse the story of the automobile jack and the ills coming to those who use poor ones. Throughout the rhyme Barrett jacks are introduced. The booklet can be considered a clever bit of publicity.

Tindel Morris Co., of Eddystone, Pa., has issued a little book on crank shafts in which are illustrated thirteen styles of crank shafts, for single, double, three, four, five and six cylinder engines. The reading pages alternate with those devoted to illustrations and in them the nature of the metal used and the construction of the shafts are given.

"Other People's Experiences" is the name of a little book issued by the H. H. Franklin Mfg. Co., of Syracuse, N. Y., on experiences of users of its machines. Upwards of fifty short accounts of their troubles and pleasures are given by Franklin drivers. The company also has ready a twenty-two page catalogue on its 1906 machines in which the general features of them are given and also a full page illustration of each. Two pages are devoted especially to giving specifications and in which every important feature in the construction is shown.



Sectional View Holley Carbureter

Digitized by Google

Among Makers and Dealers

Reo Stock Car Made Into a Reo Racing Car at a Coast Garage

Has New Idea—A patent has been granted to Victor E. Chamberlain for a controlling device for motor vehicles.

Handles Columbias—The Automobile Depot, incorporated, will open a new salesroom at 1597 Broadway, New York. It will handle Columbia electrics.

Meade in Charge—The Ford people have opened a Chicago branch with temporary quarters at 1413 Michigan avenue, which is in charge of C. C. Meade, for some time connected with the Ford forces in New York city.

Eames Is Out—Hayden Eames, of Cleveland, terminated his management of the sales of the A. O. Smith Co., of Milwaukee, last Saturday. He requests that all orders and correspondence concerning the Smith factory products be sent to the makers direct.

Fast Pace by Reo—Leavitt & Bill, of San Francisco, representing the Reo in northern California, report success with a Reo racer made from a stock car. It has made 1 mile in 1 minute 17 seconds and 5 miles in 6 minutes 30 seconds, and in a recent race beat its rivals about 20 seconds to the mile, it is reported.

De Dietrich Deal—Baron Adrien de Turckheim and W. M. Letts have just concluded a deal whereby the American agency of the de Dietrich will at once go to Allen Halle & Co., of New York, who formerly imported the Mercedes. The de Dietrich garage on West Forty-eighth street is to be closed, and new headquarters opened on Fifth avenue.

Boyd's Stock Sold—Acting under the instructions of the court, which recently rendered judgment against James W. Boyd, president of the Columbia Automobile Co., of Washington, D. C., in favor of the government, the United States marshal sold at public auction last week the goods and chattels of Boyd's company. Eight second hand cars, including Franklins, Oldsmobiles and a Waverly electric, were sold, together with the equipment in the company's garage on Eighteenth street. About $4,000 was realized. As reported in Motor Age, Boyd was recently arrested on a charge of embezzling $20,000 from the government while employed in the marine hospital service. He is now out on bail.

New Detroit Garage—A new garage is to be built at the northwest corner of Woodbridge and Brush streets, Detroit, Mich.

Will Not Move—The Oscar Lear Automobile Co., notwithstanding reports that it was about to remove, is planning the erection of a new factory at Columbus, O.

South Coming Up—The Crescent City Automobile Co. is erecting a garage on South Rampart street, near Tulane avenue, New Orleans, La. The president of the company is W. Philip Johnson, and Charles U. Kennedy is manager.

Buys Out Wyckoff—Herbert Austin has bought the business of L. J. Wyckoff, of 484 Broad street, Newark, N. J., and will engage in the sale, repair and rental of automobiles. Associated with him will be Charles Krebs, who will have charge of the mechanical department.

Keeps Old Place—W. J. Riddell, of Des Moines, Ia., has closed a 7-years' lease of the Len Harbach building at the southeast corner of West Eighth and Locust streets and will continue in the automobile business there, having abandoned the idea of securing new quarters. The present building will be remodeled to suit his needs.

Bill Dismissed—In the suit brought against Charles E. Miller by Gray & Davis, of Amesbury, Mass., for handling the so-called bullet-shape lamps made by the Atwood Mfg. Co., of Amesbury, Mass., Judge McPherson in the circuit court in Philadelphia on the 4th inst. rendered a decision dismissing the bill at the cost of the complainants, reports state.

Maxwell In Chicago—A. F. Chase, of the Maxwell-Briscoe-Chase Co., which will handle Maxwell cars in the central west, is in Chicago seeking a location for the offices and salesrooms of the company. He is considering taking space in the Old Colony building, corner Van Buren and Dearborn streets, and will open up soon. From the downtown site the company will wholesale and retail, while Dan B. Southard, at 14 Michigan avenue, will continue to rep sent the car on the row.

Factory Proposition—A proposition h been received by the board of trade the erection of an automobile factory Fostoria, O.

New Utica Garage—The Miller-Mund Motor Car Co. will open a garage Utica, N. Y., for the sale, storage and of automobiles. The new establishm will accommodate 100 cars.

Plans for Factory—C. R. Greene filed plans for a new factory for the troit Auto Specialty Co., to be built the west side of Greenwood avenue, Detroit, Mich. The cost of the build is to be $10,000.

Has New Salesroom—A new salesr and garage is building for S. A. Mi Hartford agent for the Knox and Pie cars. It will be a half block below present Miner station and will have feet frontage on Allyn street and extend 88 feet on High street.

To Quit Lockport—It is said that Covert Motor Vehicle Co. will remove Rochester, N. Y., from Lockport. plant is now located at 57-61 Richm avenue, Lockport, but the present l tion is too small for the rapidly incr ing business, and as most of the st holders are Rochester men, they will p ably seek a location here.

Moves to Foxboro, Mass.—The Amer Coil Co. has moved from West Somer Mass., to Foxboro, Mass. It has t over the entire business of the Shel Mfg. Co., of Boston, Mass., including combination spark plugs, mixing v and other electrical specialties, and manufactures induction coils, ignition namos, sparking plugs and encased b ies of the American brand.

After Factory—There is conside talk of renting the doll factory at I antville, N. J., for the manufactur automobile and marine engines. question will shortly go before the cil and definite action will be take the subject. The firm back of the ject is now located in a Pennsyl town, but if suitable arrangements be made will remove here at once.

Shows Valveless Engine—Much in has been manifested the past week automobile men in the two-cycle air- gasoline engine of W. C. Hays, whic been on exhibition in the Phipps building, Pittsburg. The engine h cylinders and no valves. It has a ca of 25 horsepower and weighs only pounds. It is 30 inches in diamet the shaft is 30 inches long. The m very much like a fire blower.

New Toledo Enterprise—The Ra Lacy Co., of Toledo, O., with a stock of $30,000, was incorporate week for the purpose of manufac gasoline engines, ranging from 3 horsepower of the two-cycle typ from 20-horsepower up in the fou type. The incorporators are Pe Jones, Paul H. Jones, Edward Ra Volney E. Lacy, Jr., Frank H. La W. L. Lamb. Volney E. Lacy h connected as designer with the Pope

Digitized by Google

people, while Edward Rathbun has been with the S. M. Jones Co. as engineer and designer.

New Hood Idea—A patent has been granted to Harry Raphael and E. D. Toops, of Indianapolis, Ind., for a folding hood for automobiles.

Premier in Los Angeles—The Premier Motor Mfg. Co. has established an agency at 1042 South Main street, Los Angeles, Cal., which will be in charge of W. Crosby and G. E. Bradbeer.

Aster Branch—The Aster company, of Paris, has opened an American branch at 1591 Broadway, New York, for the sale and exhibition of Aster motors, automobile parts, etc. A. J. Myers will be the manager of the branch.

After Ohio Business—The King Mfg. & Garage Co., recently incorporated for $20,000 and taking over the business of the King Mfg. Co. at Springfield, O., will job accessories as well as conduct a garage. It is about to move into a three-story building, equipped for garage purposes.

Mitchells in New York—Mitchell pleasure cars will be handled in New York during the coming year by the Motor Vehicle Repair & Storage Co., and the Mitchell truck will be sold by the Mitchell Motor Vehicle Co., which has taken the old Ford stand at Broadway and Fifty-ninth streets.

Has Pneumatic Hub—A company has been formed to manufacture and put on the market a pneumatic hub, which is to take the place of pneumatic tube tires, on automobiles and other vehicles. The inventor of the device is C. F. Marohn, a manufacturing chemist, of Milwaukee, Wis., and patents have already been applied for.

Factory for Madison—J. M. Crosby and M. F. Bates, of Lansing, Mich., have been in Madison, Wis., with a view to locating an automobile factory in Madison. They want the residents of Madison to subscribe for $161,000 worth of the $250,000 stock. They promise to employ 200 men and will need from 40,000 to 65,000 square feet of floor space.

To Build Own Plant—The Windsor Motor Car Co., located at Evansville, Ind., will use the plant of the Single Center Spring Co., until its own plant can be completed. The company will build cars using the Worth friction transmission. An election of officers, held last week, resulted as follows: President, J. C. Zutt; vice-president and general manager, J. A. Windsor, Jr.; secretary and treasurer, W. M. Copeland. These, with W. R. Donaldson and A. F. Karges, are directors. Mr. Windsor hails from Chicago.

Big Garage Opens—At Broadway and Fifty-sixth street, New York, the Automobile Salon, claimed to be the largest garage in the world, was formally opened by Smith & Mably Tuesday afternoon and evening with a reception having the accompaniment of music and refreshments. A fashionable crowd thronged the building. The garage is of brick and steel and has four storage floors, each with complete equipment, lockers, etc. The total floor space aggregates 76,000 square feet, and will furnish storage for about 450 cars. Repair shop, supply stores, electric charging departments and chauffeur quarters are all commensurate with the magnitude and elegance of the entire plant, in which no expense has been spared in the endeavor to produce something a little ahead of men up to date.

CONVALESCENT OFFICERS' AMBULANCE

Joins Gallaher—H. A. Weaver, formerly of the Pecauville company, has joined the Richard-Brasier company as assistant to E. B. Gallaher in New York.

McDuffee Aides—H. C. Tillotson has assumed charge of the Chicago branch of the McDuffee Automobile Co., which handles the Stoddard-Dayton. Associated with him will be Edwin F. Heywood, Jr.

Sold Its Lease—The Winton Motor Carriage Co. has transferred its 10-years' lease to Lawrence Sinnott for a consideration of $35,000. The transfer is the lease of the Huron street building, Cleveland, held by the motor car company.

Paid for By the King—The convalescent home for officers at Osborne, Isle of Wight, has been presented with a special 18-horsepower Wolseley car by King Edward. It is luxuriously upholstered and has a handsome body with windows fitted. There are six detachable fauteils, in addition to a phaeton seat in front.

Leased New Place—The Motz Clincher Tire & Rubber Co. has leased a portion of the old Webster, Camp & Lane plant at North High and Main streets, Akron, O. The Buckeye Rubber Co. will continue the manufacture of the Motz tire, but the finishing of the product will be done at the new plant. The company will shortly start in working up its foreign trade, as it has patents in several European companies, which it will publish.

Moved to Boston—The Dodge Lubricator Co. has removed to 36 Columbus avenue, Boston, where the Dodge positive oilers will be manufactured.

Used by the Swells—A typical shopping scene in New York is illustrated in a photograph recently taken in Gotham showing a society woman stepping from a White victoria in front of the store of Tiffany & Co., the jewelers.

Expensive Garage—Architects Simonson and Pietsch are to prepare plans for a garage to be built at the northeast corner of Maryland and Mount Royal avenues, Baltimore, Md., for Gillett Gill, the cost of which is estimated to be about $150,000. Work will start soon.

Another in Pittsburg—The latest automobile firm to be established in Pittsburg is the Central Automobile Co., composed of Edward G. Mooney and Edward Seely. The company has commissioned Architect J. E. Obitz to prepare plans for a one-story brick garage, 50x150 feet, in Broad street near Euclid avenue, East End, to cost $16,000.

Enlarging Place—The Atlas Automobile Co., of Pittsburg, which claims to have sold 370 second-hand cars since it started in business in 1900, is having plans prepared for a two-story and basement concrete garage to be built in the East End at a cost of $35,000. The building will be 85x120 feet and will afford storage for 300 cars.

Change In Winton Itinerary—A revised itinerary of the Winton exposition car has been issued from Cleveland. The car was in St. Louis Tuesday and Wednesday and was due to arrive in Chicago today, where 3 days will be spent. Milwaukee will be visited on the 23d, Minneapolis on the 24th and 25th, St. Paul on the 26th, Des Moines on the 27th and Kansas City on the 28th and 29th. From October 31 to November 3, inclusive, the car will be in Denver. November 5 it will be in Salt Lake, 7th at Sacramento, 8th at Stockton, 9th to 12th at San Francisco, 13th at San Jose, 14th at Fresno and 15th and 16th at Los Angeles.

NEW WHITE CAR WITH VICTORIA BODY, AS SEEN IN NEW YORK

Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

BURSTED TIRE—A tire sometimes bursts without previous warning in the shape of a lump, which being wrapped on the outside, or reinforced by cementing fabric on the inside, may not give trouble. If the burst is several inches long, it is usually possible to draw out the air tube far enough to slip a piece of shingle or stiff cardboard under it. This will hold the tube flat and permit patching it without removing the tire. After being patched it is pushed back through the breach and very lightly inflated. Be sure that it has not crept and that the casing is in place all around. When the tube rests against the casing, but without protruding through the opening, put a few wrappings of cord around the bursted portion, so as to hold the aperture closed and pump a little firmer. Then wrap the tire for a space about an inch longer than the opening smoothly and closely with cord, making sure that the aperture is closed. The wrapping should be slightly smaller than the outside diameter of the tire, but not much smaller, the object being to have the tire the same size at that point after completion of the repair as at any other point, instead of larger or smaller. When the wrapping is completed, wrap with tire tape, so as to completely protect the cord from water and dirt. In wrapping with tape the layers should overlap each other like the scales on a fish, the laps being made so that the driving effort of the tire against the ground is in the proper direction to smooth down the laps, instead of lifting them.

CARBURETER OR VAPORIZER TROUBLES.—Many things may happen to a carbureter. A grain of sand may clog the float. Water may interfere with the regular flow of gasoline, or while standing on a cold day, the water may become ice, holding the float immovable or stopping the passage of gasoline completely. The ice can be thawed by an application of hot water, or if there is absolutely no leak of gasoline, the heat of a torch outside will quickly melt the ice. This proceeding, however, is dangerous with many vaporizers and must only be exercised with judgment. Care must be taken when the carbureter is opened that no dirt drops into it, for this is likely to clog the spray tube. Lint, leaves and sometimes waste is drawn into the air pipe. This not only prevents full charges, but may cause over-rich mixtures, or, on the contrary, failure to spray at all. It is usually possible to form an idea of the trouble by opening the peep cap of the cylinder or removing the plug and applying a lighted match. If the mixture is too rich, it will burn yellow; if too poor, it may not burn at all or faintly blue, but if just right, it will explode and rush out the opening to the danger of one's fingers. If it seems to be poor, injecting a little gasoline from a squirt can or flooding the carbureter will prove whether or not the diagnosis is correct and, having determined what is the trouble, the cause may usually be found. An over-rich mixture may be caused by a leaky float, which, containing gasoline, is too heavy to perform its duty. If this is held leaky side down and warmed slightly, the gasoline will be expelled, after which the float will probably serve until it can be repaired. To repair a leaky float a very slight vent should be made in it at some place easy to solder. The leak is then soldered and the float made cold. Placing it on a piece of ice will serve. Then solder the vent hole with a light touch to avoid warming the float, and the air contained will be substantially at atmospheric pressure instead of under a partial vacuum, inviting a leak. The float chamber should always have provision for withdrawing any water and for removing the float and replacing the same easily, and in this, as in many other parts, the designer should keep in mind roadside repair as well as factory costs. If a cork float gives trouble, dry thoroughly in a warm place and varnish with shellac.

FAULTY COMPRESSION — The operator should learn promptly to notice the compression. It should be substantially alike in all cylinders and if it quickly grows less something is wrong. If the change is gradual the valve may be warping and needs regrinding. One or more piston rings may be broken or there may be a leak through some gasket or even through a sandhole in the casting. Turn the motor slowly and listen for the hiss of escaping air. If too small to hear, hold a candle at various points until the leak is located. A bent valve stem may cause the trouble. If there is no compression whatever and this condition comes on suddenly, look first for a stuck valve. Lubricating oil, baked on the valve stem, may prevent its operating properly. A broken spring will fail to close the valve or the valve itself may be broken. A spark plug or inspection cap may be loose or even lost out entirely. Sometimes a leaky piston is caused by the openings in the rings coming on the same side, in which event the rings need turning around. They are usually pinned, however, so this trouble seldom occurs. Insufficient lubricating oil, oil of too low fire test, or oil containing dirt and grit always contribute to leaks past the ton. A broken porcelain or faulty p ing in the spark plug is not infrequent sometimes hard to find. If the exh valve stem is too long, the valve ca seat properly. Sometimes it will be a when cold but the expansion will c trouble when hot. The remedy in case is to make the valve stem shorter adjustment or filing, if necessary. trouble usually manifests itself by heating the valve and parts.

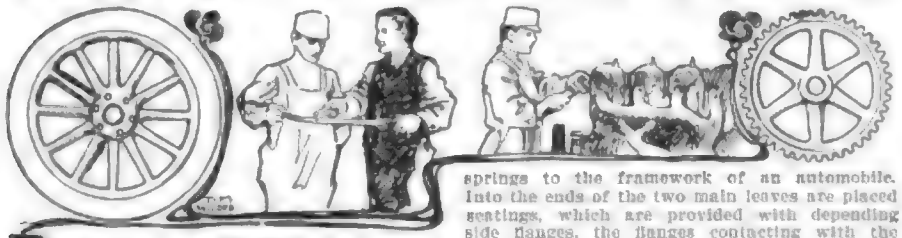
THE COIL—LOW tension coils seldom trouble, for they are simple in cons tion. Sometimes, however, they get soaked, which permits enough leaka electricity to destroy their value. this case they must be baked at a perature higher than boiling water the water is completely driven out of If convenient to boil them in par wax, this will not only boil out the but will render the coil waterproof prevent further happenings of this Soaked coils are quite frequent in work but this seldom happens in c tion with automobiles, for the coil i ally placed so that water cannot rea A careless stable boy, however, u forgets that an automobile contains anism and drenches it inside and out the result that the user wonders ho troubles could have been caused. tension coils are so susceptible to m that they are always waterproofed being sent out, but being more compl and carrying electricity of extremel voltage, they sometimes give trou cause of water on the exterior. therefore, wise in wet weather to e all parts of the coil, high tension and spark plug to make sure that of water is not carrying away a lar of the current. Wires are son broken or are destroyed by the ac the soldering fluid used to atta terminals. The ends remaining in or the undestroyed portion of the wi serve to carry a spark, but not cient intensity to prevent misfiring. bles of this kind can hardly be fou remedied by the roadside, but at t occasion a good coil should be sub and results compared. This will mine whether or not the fault is coil, and if so, prevent searching f ble elsewhere. With vibrator coils lar attention must be paid to the of which the adjustment will changing with different strength tery current.

CLATTER—Many things may mak ter around an automobile. Most can be tightened or adjusted s stop the noise. Noise is unnecessa and should be avoided, and the should either remedy the noise that it cannot be remedied and b recognize it from other noises. the user should train his ear to r the various sounds and separate lar and proper ones from those be trouble. After a little practice will detect new and strange sou many others with almost the sa ness and certainty as if the other exist. A strange clatter should b ly investigated, for the tale it tel something is out of order and a time saves nine.

EDITOR'S NOTE—This is the thirteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

Current Automobile Patents



LETTERS PATENT No. 801,521, dated October 10; to Jackson O. Haas, Pottsville, Pa.—The invention is a unique design of automobile frame. The side pieces are made of Z iron, being connected at the rear by two cross pieces, each of which extends beyond to cross pieces, so that the ends of the spring can be shackled thereto, thus leaving the side pieces free from spring hangers. Near the front of the frame is a similar cross piece for the attachment of radius rods to the front axle and for securing the steering column. The front springs are semi-elliptics placed transversely and pivoted at the top of their arch to a horizontal bolt on the frame, and at their ends shackled to seatings on the axle. The axle is connected with the frame work so that it may oscillate in an inclined plane, and the steering knuckles are pivotly connected in the usual way.

Letters patent No. 801,481, dated October 10; to Lewis C. Shipley, New York—In the construction of the frame work for a canopy top for automobiles the inventor uses standards for supporting the top, placing four on each side—at the dash, side of front seat, and front and rear of the sides of the rear seat respectively. An extra support is placed between the individual front seats. The standards are pivoted to metal supports secured in the framework of the seats, and catches are used for holding the standards in a raised position with reference to the supports. The upper ends of the standards are provided with slots to which the cross pieces of the canopy are secured, and diagonal braces are used on either side of the front seat. The framework, carrying the glass above the dashboard, consists of standards at either side, so hinged that the pieces will fold, one over the other, when the pane of glass is moved up beneath the top of the canopy, leaving the front of the car without standards of any description and permitting of an unobstructed view by the operator.

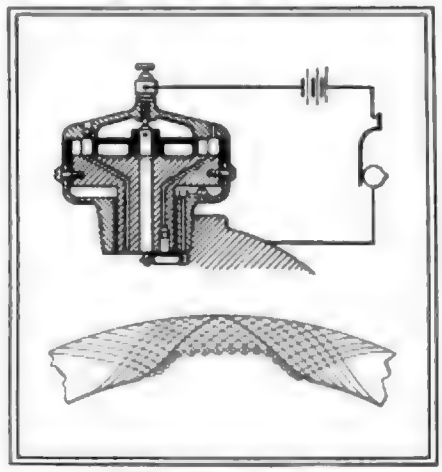
Letters patent No. 801,823, dated October 10; to Ernst J. Berg, Schenectady, N. Y.—In propelling an automobile a gasoline engine is used in driving an electric generator and the generator in turn furnishes an electric current for any number of electric motors connected in any desirable way with the road wheels of the vehicle. A feature of the device is that the generator, while driven by the gasoline engine, is used to furnish ignition current, which is accomplished by connecting the ignition devices of the engine to points on the generator commutator, having a difference of potential equal to only a fraction of the terminal voltage of the generator. In doing this the generator is furnished with an auxiliary brush, displacing a small amount of the main brush, and the spark coil of the gasoline engine has its primary wire connected between the main and auxiliary brush of the generator.

Letters patent No. 801,452, dated October 10; to Benjamin G. Gilbough, Chicago—In his ignition device for gasoline engine the inventor makes use of a rotary electrode operated by fluid pressure, the inlet and exit passages for the fluid being controlled by valves. The device comprises a casing with a removable cap and a hollow threaded stem. Within the casing is a core provided with passages, the inlet and outlet having valves attached. A wheel with two oppositely disposed series of blades is placed so that the blades register respectively with the outlet and inlet passages of the core. A rotary electrode is actuated or driven by the wheel and co-acts with the other electrode, located outside of the casing. The cam movement without the casing is used for making and breaking the circuit.

Letters patent No. 801,504, dated October 10; to Gustav Baumann, Chicago—The inventor offers a new method of attaching semi-elliptic springs to the framework of an automobile. Into the ends of the two main leaves are placed seatings, which are provided with depending side flanges, the flanges contacting with the ends of the leaves, as well as with the sides of the shorter leaves, and tending to hold them from lateral sway. The depending flange is secured to the framework of the car.

Letters patent No. 801,359, dated October 10; to Henry C. B. Cave, London, England—The pneumatic tire described has the outer casing composed of strips of nickel steel that are so interlaced with one another as to lie

GILBOUGH'S IGNITER



CAVE'S PNEUMATIC TIRE

obliquely with reference to the periphery of the cover. These strips are broader over the tread of the tire, so that when the tire is placed on the wheel and inflated the strips will mesh perfectly with one another. The ends of the cover are braided to points and brought together and the strips are then plated crosswise and attached to wires.

Letters patent No. 801,155, dated October 3; to Harry Raphael and Emery D. Toops, of Indianapolis, Ind.—The invention is a folding hood for covering the motors in automobiles. The hood is cylindrical in shape and consists of two parts secured at opposite sides of the motor, each part in turn being composed of several parts hinged together and folding down one upon another. Latching devices connect the terminal sections of the two principal parts for holding the hood together above the motor.

Letters patent No. 801,353, dated October 10; to Ernst J. Berg, Schenectady, N. Y.—The object of the invention is to control the speed of a gasoline-electric machine solely by changing the spark and simultaneously altering the throttle. In the front of the machine is placed a vertical motor with any number of cylinders. The motor is connected directly with an electric generator and the latter furnishes current to electric motors which are geared directly to the rear wheels. In controlling the speed of the car the electrical connections between the generator and electric motors are not interfered with in the least, all variations in speed being obtained by varying the speed of the gasoline engine. This arrangement of the power plant dispenses with the use of other levers than throttle and spark control.

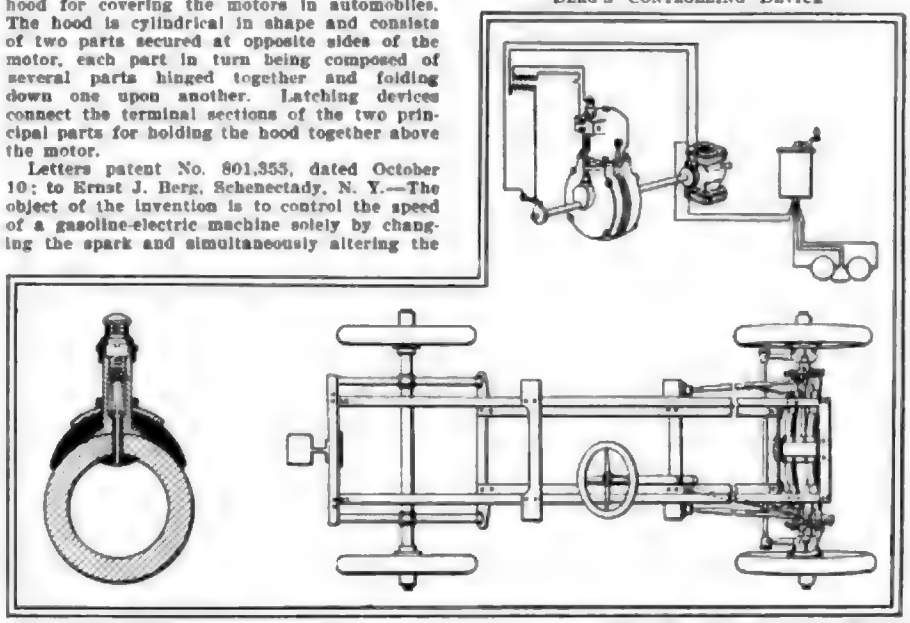
Letters patent No. 801,209, dated October 10; to Littleton K. Buck, Freehold, N. J.—The invention is a new form of valve attachment for singletube tires. The valve tube is bored for containing the operating valve mechanism and has integral with it at the inner end a flange resting on the outside of the tire tube. Within the valve stem is secured a second tube extending through the opening in the tire and ending with a button-headed flange pressing against the inner surface of the tire tube in such a way that when the tire is inflated it is held rigidly between the flange on the valve stem and the other one on the tube within the stem, resulting in an air-tight valve attachment, when there is any air pressure within the air chamber.

Letters patent No. 801,323, dated October 10; to Hubert A. Kiser and Christian P. Anders, Westover, S. D.—The invention is a reversing mechanism for attachment to the drive wheels of motor vehicles. A driving gear wheel is secured to the drive shaft or axle. Inside of this is a gear carrier with pinions mounted thereon in mesh with the driving gear wheel. An internal gear wheel has a pinion connected therewith and motion transmitting connections are used between the pinions and the traction wheels. Means are provided for locking the gear carrier against movement in one direction, and against relative movement along the internal gear in the opposite direction.

Letters patent No. 800,809, dated October 3; to Thomas H. Lindley, of Cedar Rapids, Ia.—The invention is a metal guard for protecting the tread of pneumatic tires. Encircling the tire tread is a narrow metal band, practically as wide as the diameter of the tire. On each side of the metal band are radial arms for seizing the sides of the tire when inflated and keeping the band from slipping on the tire.

Letters patent No. 800,789, dated October 3; to Thomas A. Blakely, of Fleshertom, Ont.—The device is a form of anti-friction bearing in which one circle of long rollers is used. The roller axles are retained at each end in bronze rings held in position by short bushings. The entire bearings are enclosed in an oil tight cage, one side of the rollers working on the axle shaft and the opposite side on a bronze journal.

BERG'S CONTROLLING DEVICE



BUCK'S TIRE VALVE ATTACHMENT

THE HAAS AUTOMOBILE FRAME

Digitized by Google

The Realm of the Commercial Car

TROLLEY REPAIR CAR

STEAM, that, since the day when Stephenson perfected Watt's tea kettle, has been the speed king of the years, is inch by inch being dethroned. From 1830 until 1900, three score years and ten, her reign was one uninterrupted march of progress and conquest, but with the waning years of the nineteenth century, when the demands of transportation were month by month and year by year becoming more urgent, the first rays of the opening day of the gasoline motor were piercing the overhanging canopy of doubt and the east was gradually lighting up with what was soon to be the revolutionizer of passenger transportation.

The gasoline motor that lay in its swaddling garments through the early '70s and '80s until that wizard of the motor, Gottleib Daimler, started it on its glorious march of triumph, has within the last few years grown and developed as steam never did and now verging on the threshold of manhood is fearlessly reaching out to grapple for the supremacy on the thousands upon thousands of miles of steel that for so long have been the undisputed home of the steam engine.

The coming of the gasoline motor as a means of power for railroads is no idle dream, no vain illusion, but a rapidly approaching reality. Fairbanks, Morse & Co., of Chicago, one of the leading railroad supply houses of the country, have commenced in one of their big plants the manufacture of all styles of gasoline motor inspection, section and observation cars for use on any standard railroad line, and report that since the first of the present year they have sold over 500 of these to the leading roads of the country. When such lines as the Erie, Chicago & Great Western, Chicago, Burlington & Quincy, Long Island, Union Pacific and other lines are installing them as fast as they can get them it is ample proof that the gasoline railroad inspection and section car is not an experiment but a practical outfit.

The old way of inspecting a roadbed from a private car, drawn by a special locomotive, with a special fireman, a special engineer, a special brakeman and a special conductor, the whole at a very special price and expense, is being superseded by inspection in a trim gasoline car with seating accommodation for ten or a dozen people and driven by a two-cylinder gasoline motor of 12 or 14 horsepower capable of making 35 miles an hour over good roadbeds with as much convenience as necessary and with the expense absolutely nothing compared with that of a special train.

Perhaps the most novel and little used field of the gasoline car is that for trolley repair work. Every citizen of the smallest town where the overhead trolley constitutes a part of the transportation system, is familiar with the tower wagon, generally hauled around by a couple of horses and requiring a long time to reach a point where the wire has broken down. The gasoline motor trolley wagon runs on the street car tracks and can move along at a speed of 25 miles an hour when the tower is lowered as much as possible, and with it up at its highest, fast traveling is possible because of the little vibration on the steel rails compared with the rocking that the horse-drawn one is treated to. This car is made especially for inspection as well as repair work. It is lightly constructed, so that in case a break occurs and there are several cars on the line between the break and the repair car, the latter can be run close to the street cars and then lifted off the track, the trolley cars backed up until none remains between the tower wagon and the break, when it is lifted back in place.

The car has a single-cylinder water-cooled motor rated at 6 horsepower. By placing the motor and transmission gear close to the front axle the entire back part of the chassis remains open for attaching the tower. The motor generates its normal power at speeds practically the same as every automobile motor, and the transmission of power is through a two-speed and reverse planetary gear transmission carried on the crankshaft. On high speed direct drive is obtained from the motor shaft to the center of the fro axle, a single chain acting as the tra mitting medium, this being identical w automobile construction. This constr tion has been found, by continuous exp ments, to be much better than where motor is geared positively to the dri shaft, in which case when the motor started motion is at once communicated the drive wheels. With the automo connection between motor and dr wheels the control in stopping and st ing as well as the regulation of spee made more delicate and ease of con correspondingly increased.

Gasoline is fed to the motor by a f feed carbureter and the control of t throttle and spark is identical with on the automobile, except in that a st ing wheel is not needed and the thr and spark levers are short finger le working on opposite sides of a horizo circle at the right of the operator.

Ignition is by jump spark, a stan spark plug being placed in the usual tion and connected with dry cell storage battery and a coil. Water co is effected by a gilled tube radiator, in the center of the car above the axle so that the tubes, arranged in zontal rows, are exposed to all air th coming.

The planetary transmission has usual quota of gears running in a bath. Changes in speed are gained thr the use of a lever, with a pedal se for the reverse. The only brakes us a pair of shoes working on the tires o rear wheels and applied either by or lever.

The tower consists of two pa lower half of large size and made of wood or steel and a steel top of the construction made to telescope with

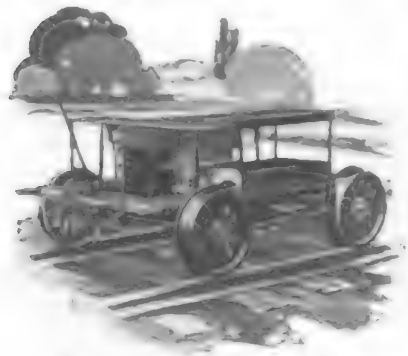
OPEN INSPECTION CAR

bottom part. The top part can be or lowered with little effort. The insulated from the ground by the wooden center wheels.

The most popular railroad car is intended for the use of section gan placing as it does the familiar worked by the passengers. Car made by the Fairbanks concern, much larger than the common hand differs slightly in general lines motor plant is located above the fr and consists of a single-cylinder cooled motor developing 6 horsep

Digitized by Google

1,000 revolutions per minute. In line with the crankshaft is an enclosed, oil-tight, planetary transmission, with single chain drive to the center of the front axle. Two forward speeds and a reverse are provided. The body part is a flat platform with a T shaped raised central seat serving also as a covering for the machinery. On this seat is accommodation for ten



CAR USED BY THE SECTION GANG

workmen and on the footboard is space for carrying their tools. The car can be lifted off the track by four men in case of an approaching train.

For railroad inspection work the same makers offer two styles of machines, one with practically the same power and transmitting system as in the section car, but fitted with four semi-elliptic springs, clipped to seatings on the axle casings and shackled, automobile fashion, to the side pieces of the main frame. In this car the radiator is thrown beneath a slightly inclined dash—another touch of automobile style—the change speed lever is at the right of the driver, as are the spark advance, throttle lever and battery switch. The aim in construction of these cars has been to make them as similar as possible in their control to the present-day motor car. Passenger accommodation for four men is provided, two on a permanent seat in front and two or three on a removable seat on the rear platform. Both seats are upholstered. In case the back one is not needed it can be removed and in its place attached a carrying compartment for baggage. The car is provided with corner handles for lifting off the tracks for passing trains but generally they are run on dispatcher's orders according to regular schedule.

The company's large inspection car is built for nine people and is driven by a two-cylinder 12-horsepower motor, with cylinders mounted vertically beneath the front seat.

The drive is by chain to the front axle with changes of speed gained by a planetary transmisison. The car body has a cross seat in front for the driver and one passenger and facing seats in the rear with room for four on each seat. A canopy top with sliding glass front, glass sides beside the driver and drop curtains for protecting the rear seat passengers are features of it, making it suitable for long-distance work. This machine is adapted to be run on regular railroad schedule and being furnished with special springs can be speeded to 35 miles per hour. In case the rear seats are not needed they can be removed and used for carrying baggage. While built especially for railroad inspection work it is suitable for running on side lines where the passenger traffic does not warrant regular steam service but where little accommodation and more frequent service are the essentials. One of these cars recently made a run from Chicago to Denver and return, covering the 2,011 miles at an average of 29 miles an hour. On the trip all kinds of grades common to railroading were encountered, but the machine mounted them on the high speed.

One feature noticeable in all these cars is the solid and heavy construction, as well as the introduction of good springs for machines running at fast speeds. Every reader is familiar with the jar felt in the palatial Pullman car when passing over crossings and joints at high speed in spite of the spring suspension of the coaches. This occurs, only in a lesser degree, in these gasoline cars and the jar occasioned at 30 miles an hour is sufficient to crystallize axles of the ordinary construction as well as to loosen the piping connection in and around the motor.

AUSTRALIAN SEEKS CARS

About two years ago James Trackson, of Trackson Brothers, Brisbane, Queensland, left that city for the United States and Europe to seek for the most suitable road transports for freight and passengers for Queensland. He spent about 5 months in this country, 4 months on the continent of Europe, and several weeks in England, which country, he states, he found ahead of others in this field. As a result of this visit he purchased six outfits of a steam engine and three trailers, which are now in use in Brisbane, and more are on the way. The enterprise is still in an experimental stage, but the following routes over which the transports are to be run will show the extent of the service: Yeulba to St. George, 129 miles; St. George to Dalby, 304 miles; Warwick to Goondiwindi, 120 miles; Miles to Garoon, 105 miles; Cunnamulla to Thargomindah, 142 miles; Ilfracombe to Isisford, 65 miles; Barcaldine to Muttaburra, 92 miles; Longreach to Winton, 125 miles.

One requirement of motor service of this character is good roads. The engine and freight cars have wheels whose tires range from 6 to 12 inches in width. The speed of motors is from 8 to 10 miles an hour, and they will have a load-hauling capacity of about 10 tons. The engines are run in pairs, one being equipped with wood-sawing machinery for supplying fuel, and also a 30-ton steel hawser, fixed on an emergency drum, to assist in passing creeks and bad places on the road. The exhaust steam will pass into the return boiler tubes to extinguish sparks, so as to minimize risks of grass fires. The engines are of the compound type, work with a pressure of 225 pounds of steam, and are provided with filtering, suction and other apparatus necessary for the class of work for which they are intended. The gearing is in an inclosed oil tank, into which dust cannot penetrate. Fuel in many districts can be easily obtained, but water, particularly during the summer months, will not be so accessible.

After inspecting transports of various motive power, steam, electric, gasoline, etc., Mr Trackson states that he found that steam would best meet the conditions in Queensland. He states that he did not order American-made machines, because they were too lightly built and would not stand the rough roads and wear and tear of the Queensland bush; that until American manufacturers make heavier and more substantial motors they cannot compete with the English manufacturers in selling vehicles for the conditions obtaining in the Australian bush.

Each tractor is built on very heavy automobile lines rather than following traction engine construction. The boiler is placed in front directly above the front

DESIGN OF ENCLOSED INSPECTION CAR FOR USE ON LONG TRIPS . . .

Digitized by Google

BRILLIE BUS IN CHATEAU THIERRY HILL CLIMB

axle, with a locomotive type of smoke stack rising from the center. The driver sits directly behind this, and slightly to the rear of him and beneath the frame of the car is the motor, furnished with steam from the boiler. The entire carrying platform is used for carrying fuel, either coke, coal, wood or anything that will burn, and water tanks. The back wheels, besides having very broad tires, have cross pieces on each to increase the traction. They are in short traction engine wheels. The trailers are common heavy wagons with wide iron wheels. They are strength personified and couple one to another much as do the ordinary street cars.

TESTED ON CHATEAU THIERRY

October 1, the date of the Chateau Thierry hill climbing contest in France, was especially conspicuous this year in that motor trucks and motor vans competed against one another in ascending the 1-mile hill. In previous years touring cars and racing machines have been the only competitors, but France is now in the commercial game and many makers were on hand with trucks and passenger buses to test the work of their machines. The Chateau Thierry hill is a mile ascent with the grade slightly over 10 per cent in one place. The fast pleasure cars and racers contested over 1 kilometer of the grade, above this point there being too acute a curve to warrant letting the fast machines try it, the condition of the hill not being the best and the danger of accidents being very great. Accordingly, while the fast cars had to be content with a ⅝-mile test, the slower ones, including the trucks, had a chance at the mile climb.

All competitors were given a very short flying start and the Automoto truck, carrying rather less than 3 tons, climbed the hill in 9 minutes 3⅘ seconds. The Aries truck, with a total weight of more than 4½ tons, was 17 minutes 20 seconds in covering the hill; and the Brillie truck with a load of 5 tons of stones got up in 17 minutes 53 seconds. Two motor buses lent by the Paris Omnibus Co., with which they are at present undergoing tests, climbed the hill in magnificent style. The gasoline-electric Krieger bus, with as many passengers as could possibly be crammed into it, climbed the hill in 17 minutes 3⅘ seconds. The Brillo gasoline bus with the same seating accomodation, but slightly lighter in construction, took the 10 per cent grade with remarkable ease in 14 minutes 42 seconds. The driver of this bus gave a free invitation to one and all to mount his vehicle. The natives did not need pressing, and in a few seconds the inside, the outside, the platform and the steps were crowded with joyful rustics. As they got off th bus they were counted and were found t number no fewer than sixty-five. Som twenty were children, but an equally larg number were men of more than ordinar growth. As soon as the day's event were over the Brillie bus returned t Paris by road as it had come 2 days pr viously, covering the 55 miles with th greatest ease, despite a full load of pa sengers and a series of difficult hills.

The construction of all the competin machines was standard in practically a lines. The Brillie bus is a double-deck with rear entrance and stair case to t upper deck, which is protected by canopy. The driver occupies a cross se directly above the bonnet, the foot boar being taken out when examining t motor. A canopy projects over the driv with side and front drop curtains for w weather. Final drive is through doul side chain, the sprockets on the ends the counter shaft being very small. T sprockets, as well as the chains are p tected by a metal covering, excluding m dirt and grit. The body is of Lond omnibus design, finished in white, w broad blue trimming lines. Solid rubb tires on the front wheels and double the rear wheels were fitted during the t but in the Brillie truck flat steel tires circled all of the wheels, those on r being much wider than the the fro On the truck a common draying body w low wooden sides was used. The load this vehicle consisted of large stones.

Compared with the foregoing machin the Automoto truck was of very li construction being practically touring like as far as weight is concerned. has double side chain drive. In the A truck the driver's seat is located dire over the motor, the tube radiator ha beneath the dash, drive is by double chain and solid rubber tires are fit

USING DOUBLE CHAIN DRIVE

The Rapid Motor Vehicle Co., of Pon Mich., manufacturer of commercial chines, has its first 1906 machine on road undergoing tests. The new car fers from this year's machines in the of double chain drive, as well as in m parts relative to the motor and tran sion. The company is having a new l ing erected which it hopes to occup the middle of next month.

BRILLIE TRUCK — THE CHATEAU THIERRY COMMERCIAL HILL CLIMB — ARIES

Digitized by Google

Commercial Stepping Stones

French Woman Clipping Sheep by Power Clipping by Gasoline Engine

Fast Pace for Bus—The double deck omnibus running over rural routes in England is permitted to travel at a 12-mile gait, irrespective of localities passed through. Going at this rate—when fitted with solid tires and well loaded—there is no serious jar to the machinery, which goes to show the big part played in automobiling by good roads.

Wants Another—The Chicago public library board is asking for proposals from manufacturers for a gasoline delivery wagon to be used in delivering books from the main office to the sub-stations. Already the board is using three air-cooled cars in this work and the fourth machine will, it is expected, be used as a relief one, doing duty when others are being repaired and also in emergencies when breakdowns occur to the ones in service.

Shy On Batteries—The Park Auto Co., of Pittsburg, Pa., which started a line of touring buses 2 months ago, is having considerable trouble with its machines. Only one bus has been secured thus far, although it was expected that two more would be put on this summer. The difficulty is that enough power cannot be generated by the batteries to carry the car full of people over 25 miles and as this distance constitutes about one and a half trips as advertised there is constant caution required on the part of the chauffeur to see that the machine is charged after the first trip.

Spreading in London—The motor bus movement is spreading in London, despite the fact that it is doubtful if any one of the companies engaged in the competition can be showing a profit, if any allowance is made for depreciation. The number of motor buses that worked in 1 week was 130 and at that a fresh batch has just passed the police test—turning inside a 30-foot circle, brakes, etc. The effective life of a motor bus cannot exceed 3 and will probably stop at 2 years, for they are being run 19 and 20 hours a day. As they cost from $4,000 to $4,500, the figures necessary for profitable operation seem easy to arrive at. But nobody appears to have the courage to tackle the problem up for consideration.

Motor Dog Clipper—French poodles and sheep are latest victims of the gasoline engine. In the hot summer months the French dog fancier cares as much for the comfort of his canine as does the average American horseman for his pacer or the devoted automobilist for his 90-horsepower machine. Clipping poodles has previously been done by the tondeur or dog shaver, but the invasion of the motor shaver has commenced and already the tondeur is becoming anxious. The motor shaver is a little two-wheeled gig much like the ordinary popcorn roaster so common in city streets, differing, however, in that a little vertical air-cooled gasoline motor is mounted where the flame in the popcorn gig is located. On the front of the gig is a large flywheel revolved by round leather belt from a small wheel on the end of the crankshaft, and the axle of the flywheel is continued in the form of a flexible shaft, much the same as that used by dentists. On the end of the shaft is fastened a small pair of the ordinary hair cuppers. The sheep or dog is held on the knees of an attendant when a second party, generally a woman, seizes the end of the flexible shaft carrying the clippers and is soon ridding the panting animal of its woolly coat.

Shipping Light Trucks—The Mitchell Motor Car Co., of Racine, Wis., has shipped its first consignment of light trucks to its New York selling agents, the Mitchell Motor Vehicle Co., located at Fifty-ninth street and Broadway. The company has practically completed 50 of these machines and expects to put a great many more through before the opening of the season.

Has Hotel Bus—The Mobile Carriage Co., San Francisco, Cal., has manufactured for the Hotel St. Francis a large passenger bus for use between the hotel and depots. The vehicle follows extended touring car lines rather than common bus construction. The passengers enter at the rear and occupy facing seats. Power is furnished by a vertical motor carried in front with drive by double side chains.

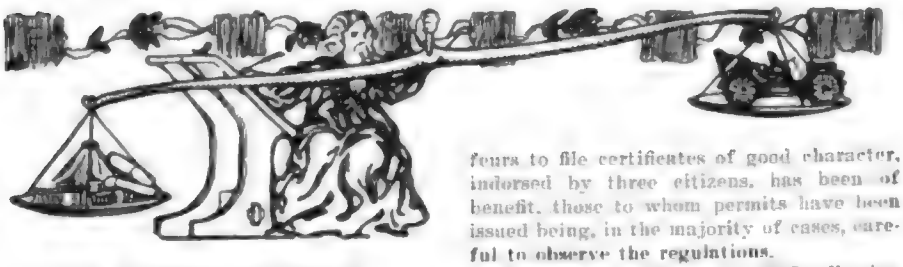
Bad Streets a Drawback—Siegel, Cooper & Co., Chicago, have used a Woods electric delivery wagon in connection with their delivery system for several years. The machine has good carrying space and is used over regular routes. The bad condition of many of the streets in the Windy City has restrained the company from installing several additional wagons, the extra cost of rubber tires being the heaviest expense in connection with the operation of the machine.

Buys Packards—Five 1½-ton trucks have recently been sold by the Packard Motor Car Co., of Detroit, Mich., to the Adams Express Co., for use in New York city. The trucks have the vertical two-cylinder 14-horsepower Packard motor, with friction clutch, sliding gear transmission and double side chain drive. Solid rubber tires are fitted. The company has also shipped this week three other trucks of the same power to Central America to be used on routes between the mines and the coast towns. The Packard concern reports that it has been taxed to the utmost capacity during the entire summer to keep up with orders and is now considerably behind in deliveries.

Packard Trucks Built for Use by Adams Express Co. in New York City

Digitized by Google

LEGAL LIGHTS AND SIDELIGHTS



TO STOP NUMBER TRANSFERS

The second annual report of the automobile board of the District of Columbia, submitted to the district commissioners Saturday, shows that during the fiscal year ending June 30, 1905, a total of 667 applicants were examined and granted permits to operate automobiles within the district. Automobiles to the number of 468 were assigned identification numbers; numbers were authorized to be transferred from former owners of 168 machines to new owners of the cars when sales of the cars were reported to the board and sixty-eight automobiles from other jurisdictions were allowed touring permits. Detailed figures transmitted with the report show that of the 468 new cars registered during the year 137 were electrics; 393 were gasoline, 109 steamers, while twenty-eight motor cycles were registered during the year.

The board makes a number of recommendations. One of the most important is that which, if enacted into law, will prevent the indiscriminate transferring of permit numbers from one automobile to another. In this connection it is recommended a regulation be passed which will require "that on the assignment of a permit number to an automobile the secretary of the automobile board shall issue and deliver to the owner of such motor vehicle a seal of aluminum or other suitable metal, which shall be circular in form, approximately 2 inches in diameter, and have stamped thereon the words 'Registered motor vehicle, District of Columbia,' with the registration number inserted therein, which shall thereafter at all times be conspicuously displayed on the motor vehicle to which such number has been assigned. Upon the sale of said motor vehicle the vendor shall report immediately such sale and return the registration seal affixed to such motor vehicle, and, further, that all motor vehicles owned and operated in the District of Columbia be required to procure and display such registration seal."

Similarly, to guard against reckless non-owners or chauffeurs, and to render more general a compliance with section 8 of the automobile regulations, which requires operators of automobiles "to exhibit his or her permit to any police officer * * * when demand for such exhibition is made," the board recommends that an aluminum badge hereafter be issued to such non-owners or chauffeurs, the badge to be stamped with the words 'Registered chauffeur, No. ——, District of Columbia,' and to be worn in a conspicuous place on the clothing."

In conclusion the report says: "The regulation requiring professional chauffeurs to file certificates of good character, indorsed by three citizens, has been of benefit, those to whom permits have been issued being, in the majority of cases, careful to observe the regulations.

"The order of March 1, 1905, allowing tourist or non-resident owners of motor cars, who have complied with any law requiring the registration of owners of motor cars in the state, territory or federal district of their residence and the registration number showing the initial of such state, territory, etc., to register the description and designation numbers of their motor cars, giving temporary address in the District of Columbia and their home addresses with the secretary of the automobile board, thereby entitling them to operate such registered motor car in the District of Columbia for a period of 60 days, has been very favorably commented on by everyone who has registered."

LONG ISLANDERS' TROUBLE

The Suffolk county, Long Island, authorities having by their withdrawal of the reward to sleuths, ceased their persecution of automobilists, the men who constitute the Islip town board have devised a plan that promises to make some trouble for owners of the horseless vehicle. The town board has adopted a resolution providing that when arrests are made by the deputies and constables the town will pay the cost of prosecution. Since the $25 reward was taken off by District Attorney Smith, the local sleuths have not been as active, and as a result few, if any, arrests of automobilists have been made. While the town board seems anxious to make life a burden to touring automobilists, it is believed the resolution will not cause any great activity on the part of the deputies, for the reason that there is no incentive for them to make arrests when only the legal fees and costs are paid. With a reward of $25 for each conviction it was different. So far as is known there have been no flagrant violations of the speed law, and no reason for the town board's action seems to exist.

NEW JERSEY CASE

S. W. Rushmore, of the Rushmore Dynamore Works, of Plainfield, N. J., announces he will take an appeal from the decision of a jury in Justice John Franklin Fort's court at New Brunswick, N. J., which brought in a verdict for $500 for, as he alleges, the loss of a bicycle, a slightly cut finger and a week's wages of a workman who crashed into the 12-horsepower Packard Mr. Rushmore was driving. It is also asserted by Mr. Rushmore that the justice, in his charge to the jury, said that while "at times the rider of a bicycle or horse-drawn vehicle must cross to the left side to avoid accident or to pass a slower or stationary vehicle going in the same direction, there was no such law permitting an automobile to so pass to the left." It is also claimed by Mr. Rushmore that the justice added that "if you find that the plaintiff was, as he had a perfect legal right to be, on the right side, then you must find for the plaintiff."

As stated by Mr. Rushmore, the facts in the case are as follows: "On May 28 I was driving a 12-horsepower Packard car along Richmond street, Plainfield. The street was obstructed on the right side and a large, slowly-moving truck on the car tracks in the center made it necessary for me to pass to the left. As I was turning to the right side again I saw two bicyclists coming toward me and I signaled with my horn. Both riders looked up and the first rider, becoming confused, turned to his left. I quickly turned to the left again and safely passed the first rider. The second rider, thinking I had continued, passed over to the right and kept on at top speed. He had his head down and was looking backward at a lot of men who had just been paid off at the Scott Press Works and were calling to him. I signaled again and noting that a collision was inevitable, I jammed on brakes and threw the car to the right, stopping in its own length and directly at right angles to the street. After the car came to a full stop the wheelman ran head-on into the side of the rear wheel. He was thrown off and his wheel smashed. He got into the car with me and I took him to the doctor's office. His finger had been cut on the steel fender and I tied it up with my handkerchief. After leaving him at the doctor's I went to the man's house and explained the accident to his wife. I did not admit any responsibility, but recognizing the man as one who had worked in my shop, I offered to repair his wheel and pay his wages while his hand was disabled. The man was back to work in a few days and brought suit for $1,000."

KANSAS CITY LAW INVALID

In Kansas City, Mo., the city ordinance regulating the speed of automobiles and providing various regulations concerning them and providing for the examination and licensing of automobile operators, has been declared unconstitutional by Judge Brumback of the circuit court, and a temporary injunction issued enjoining the city authorities from enforcing it.

Another city ordinance, providing for the taxing of automobiles, was declared constitutional, and it will be enforced. The validity of both ordinances was attacked by the Kansas City Automobile Club, and an injunction was asked to prevent the enforcement of them. The taxing ordinance was attacked because the charter provides for the city taxation of carriages and vehicles, but does not mention automobiles. Judge Brumback held that automobiles might fairly be considered to be included in the word "carriages" in the charter, as no mention of motive power was made in the charter.

Judge Brumback held that certain provisions in the other ordinance were unreasonable, oppressive and unconstitutional, in not affording equal protection of law, but, he held, the city had authority to pass an ordinance that would regulate automobiles, and that would be constitutional. That feature which provided

Digitized by Google

the examining of operators was unjust, because the board of licensing examiners was not composed of persons having any skill to judge of the qualifications of operators, and for the further reason that the ordinance does not distinguish between the operators of steam, gasoline or electric machines. The opinion of Judge Brumback says:

"The examination provided for does not distinguish between them and the board may require a person desiring to operate an electric automobile to pass an examination upon a steam engine, or vice versa, as but one kind of license is provided for, and another person who, by the favoritism of the board, may be examined upon an electric automobile, which requires simply knowledge enough to steer it, may, by virtue of his license, run a high-power, dangerous machine of another character. I cannot regard any such arrangement as affording any reasonable protection whatever to the public.

"I cannot agree with the contention of counsel for plaintiff that the city has no power to require operators to qualify. I consider it plainly apparent that high-power and high-pressure vehicles operated by the dangerous agencies of gasoline and steam or high-speed vehicles operated by electricity are sources of danger in the hands of persons not properly trained and that skill and experience may properly be required of operators thereof."

About the provision which requires the operator of an automobile to stop when demanded by the driver of a horse the court said:

"It makes a person lawfully entitled to the use of a highway subject without appeal to the whim and caprice of some other person."

The court says further:

"The provision of the ordinance that upon any accident happening it shall be the duty of the operator of the automobile to come to a full stop and give the owner or person injured or persons in charge of the vehicle a card with his name, license and number written thereon, appears to me to be a plain attempt to make a person a witness against himself, and is therefore unconstitutional."

CALLS ILLINOIS LAW O. K.

The supreme court of Illinois has ruled that the statute passed in 1903 is valid. It provides that a speed not to exceed 15 miles an hour may be taken on the country roads. The statute further provides that it is the duty of the motorist to bring his machine to a full stop on approaching a horse or team that shows signs of fright. The case that was passed on by the supreme court went up from Mercer county. A team of mules was frightened and dumped the occupants of the buggy. The owner of the mules was hurt somewhat and he sued for damages, getting a verdict of $1,250. The automobile was not brought to a stop in that case. The case is Christy versus Elliott and appears in the Northeastern Reporter, volume 74, page 1035. All possible questions touching the constitutionality of the statute were raised. The supreme court goes exhaustively into the case and firmly upholds the statute in every particular. The court holds that not only must a driver bring his car to a stop on the roads when a horse frightens, but he must use diligence in discovering whether or not a horse frightens. The reasonableness of the statute is supported under the police power of the state. It was claimed this statute amounted to class legislation, being something that was aimed only at owners of automobiles. The court utterly refused to take any serious interest in that contention. The same statute further provides that a driver may be fined and imprisoned in the county jail for running to exceed 15 miles an hour, or for failure to bring his machine to a stop when a horse frightens.

MOTORPHOBIST SETTLES

The much talked of case at Racine, Wis., in which Ernest Kell, a Caledonia farmer, was fined $25 and costs for assaulting Sam Hanson, chauffeur for Dr. C. I. Shoop, with a pitchfork and afterwards made the defendant in a $1,000 damage suit brought by the injured man, has been settled by Kell's paying Hanson $100 and the costs of the case, no inconsiderable amount. The assault aroused the ire of motorists.

BRIEF BUSINESS ANNOUNCEMENTS

Nashua, N. H.—H. C. Lintott has the agency for the Reo cars.

Portland, Ore.—Ballou & Wright, 86 Sixth street, have been appointed local agents for Morgan & Wright.

Peoria, Ill.—Work has begun on the buildings of the Illinois Automobile and Parts Co., at the corner of Main and Globe streets.

Youngstown, O.—Walter P. Flynn, a manufacturer of automobiles here, recently visited Bay City, Mich., in search of a site for a new factory.

Detroit, Mich.—Benjamin Webster, formerly of Boston, has opened an exchange at 251 Jefferson avenue and will handle the Welch. He will also conduct a repair shop.

Evansville, Ind.—The Windsor Motor Car Co. has been organized here for the purpose of manufacturing automobiles. Evansville and Chicago capital is interested in the plan.

Pittsburg, Pa.—The Hardy Automobile Co. is closing out all its machines at its garage at 529 Second street, Allegheny, where it has been handling medium classed cars the past year.

Fort Worth, Tex.—A. B. Wharton and W. W. Sloan, Jr., are soliciting support for a garage here, it being proposed that the new company buy out the business of the Wharton and Childress garages.

Springfield, Ill.—The new garage of the Quincy Automobile Co. will be built on South Fourth street, just opposite the woolen mills and will be 60 by 175 feet and one story high.

Madison, Wis.—The E. W. Arbogast Motor Co., of Waunau, has filed a resolution of dissolution.

LATE INCORPORATIONS

Boston, Mass.—The Greendale Gas Engine Co., of Worcester, has been incorporated with a capital stock of $15,000.

Boston, Mass.—The Teele Automobile Supply Co. has been incorporated with a capital stock of $10,000.

Albany, N. Y.—The Auto Exchange of Albany has been incorporated to manufacture and deal in automobiles. Capital stock, $5,000.

Waco, Tex.—The Waco Auto & Electric Co., of Waco, has been organized with a capital stock of $5,000.

Cleveland, O.—The Standard Automobile Co., of Cleveland, has been incorporated for the purpose of manufacturing automobiles. The capital stock will be $10,000.

New York—The Automobile Buyers' Association, of New York city, has been incorporated with a capital stock of $10,000.

New York—The Austin-Carmack Engine Co., of New York city, has been incorporated with a capital stock of $5,000.

New York—The Hudson Automobile Co., of New York city, has been incorporated with a capital stock of $5,000, to manufacture and deal in automobiles.

New York—The Central Park Automobile Storage Co., of New York city, has been incorporated with a capital stock of $40,000. The company is to engage in the storage of automobiles and other vehicles, and will conduct a garage.

Lansing, Mich.—Articles of incorporation have been filed by the Auto Lorgnette Co., a corporation established for the purpose of manufacturing and selling face protectors and other goods. The capital stock is $3,000. The stockholders are John H. Himes, Augustin Hendricks and Gertrude Hendricks.

Buffalo, N. Y.—The Kilgore Automobile Air Cushion Co. has removed to 46 Columbus avenue, Boston, which is now to be the main office of the company.

New York—Underhill & Mathews have leased 1843 Broadway for Peter Vogel to the St. Louis Auto Car Co., which will use the premises as a garage.

Boston, Mass.—Allen G. Stillman, formerly with the Pope company, has become associated with J. H. McAlman in the local branch of the Locomobile company.

Springfield, O.—The King Mfg. & Garage Co., recently incorporated, is looking for new quarters. The company is engaged in the manufacture of automobile tops.

San Francisco, Cal.—The Chanslor & Lyon Motor Supply Co. has opened here a branch of its Los Angeles establishment and will carry a full line of parts and accessories.

Pittsburg, Pa.—A permit has been granted by the building department to the Pittsburg Motor Vehicle Co. for the erection of a one-story frame factory on Summerlea street to cost $6,000.

Philadelphia, Pa.—John Draper, one of the potent factors of the old champion Kelly-Draper tandem bicycle team, will in future look after the wholesale business of the Thomas B. Jeffery Co. in Philadelphia.

Boston, Mass.—The Butler Motor Co., of Boylston street, will handle during the coming season the Rapid Vehicle Co.'s commercial vehicle. The company handles the Cleveland and Pierce-Racine.

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.
W. GRANT MURRAY, Second Vice-Pres., Adrian, Mich.
S. W. MERRIHEW, Third Vice-Pres., 154 Nassau St., New York.
FRANK A. EGAN, Secretary, 132 Nassau St., New York.
FREDERICK B. HILL, Treasurer, 32 Binford St., Boston.

National Headquarters
Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the cooperation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

APPOINTMENTS MADE

The following named members have been added to the list of local consuls: C. J. Lord, Cando, N. D.; Dr. J. R. King, Braddock, Pa.; James E. Glass, Pittsburg, Pa.; Thomas McK. Cook, Pittsburg, Pa.; W. B. Deshon, Pittsburg, Pa.; Henry Wittmer, Pittsburg, Pa.; W. W. Coleman, Swissvale, Pa.; H. E. Grant, Pittsburg, Pa.; D. F. Henry, Pittsburg, Pa.; Cecil Robeson, Albany, N. Y.; J. J. Kirke, Brooklyn, N. Y.; Nelson Hartsell, New York; Mark M. Trebert, Cincinnati, O.; A. B. Browne, Cleveland, O. Of the members above named those residing at Pittsburg, Pa., together with Messrs. Coleman, of Swissvale, and King, of Braddock, are members of the Pittsburg board of consuls.

OFFICIAL HOTELS

The following official hotels have been added to the list recorded at League headquarters. These hotels have been selected from a list recommended by different touring members of the A. M. L. and the secretary is glad at all times to receive information respecting different inns, hotels, restaurants and road houses which bid for the patronage of touring motorists. Such information is always treated in confidence, and the name of the informant is in no case disclosed. Official hotels are not required to allow a discount to A. M. L. members but are under contract to furnish clean, comfortable and hospitable quarters and good service. Failing in this the official appointment is promptly canceled. It is the effort of the league to maintain on its official list only those hotels which are the best in their separate localities. Following are the appointments mentioned: Lakeville, Conn., New Wononsco; Bretton Woods, N. H., Mount Pleasant; Poultney, Vt., Lake-View-in-the-Pines; Northampton, Mass., Norwood; Springfield, O., Bookwalter; Lakeville, Conn., Interlaken Inn; Warren, Mass., Hotel Ramsdell; Palmer, Mass., Converse house, and the New Hotel Burns; New Preston, Conn., Hopkins place; Chicopee, Mass., Columbian hotel; Weekapaug, R. I., Weekapaug inn; Far Rockaway, N. Y., Hotel Manhattan; Lee, Mass., Morgan house; Harvey's Lake, Pa., Rhoads' Lake; Oradell, N. J., Hotel Delford; Springfield, Mass., Worthy and Cooley's; Colebrook, N. H., Monadnock house; Gloucester, Mass., Colonial Arms; Stony Brook, Conn., Three Elms house; Chester, Mass., Riverside inn; Coatesville, Pa., Hotel Taylor; Hackettstown, N. J., Hotel Clarendon; Northampton, Mass., Draper; Boston, Mass., Hotel Victoria; Hackettstown, N. J., American house; Dingman's Ferry, Pa., High Falls hotel; Islip, N. Y., Islip Lodge; Rockville Center, N. Y., Knickerbocker. Additions to this list will follow.

STATE DIVISIONS

In the formation of state divisions, under league constitution, each state division will be controlled by a board of officers elected by the members at large and to facilitate the election of representatives each state is divided into separate districts. Pending the time when each state will adopt its own constitution and by-laws a tentative division into districts has been made in several of the most important states and these districts will each embrace several counties. The various districts in each state and the counties comprised in each district will be announced in these columns from week to week, or will be sent by circular announcement to the members in the various states.

The Maine Division—District 1 will comprise the counties of Washington, Hancock, Aroostook, Penobscot, Piscataquis and Somerset. District 2, counties of Waldo, Knox, Lincoln, Kennebec and Franklin. District 3, counties of Cumberland, Androscoggin, Oxford and York.

The New Hampshire Division—District 1, counties of Coos, Grafton, Carroll, Sullivan, Belknap and Merrimack. District 2, counties of Strafford, Rockingham, Hillsborough and Cheshire.

The Vermont Division—District 1, counties of Franklin, Orleans, Essex, Lamoille, Chittenden, Caledonia, Grand Isle and Washington. District 2, counties of Addison, Orange, Rutland, Windsor, Bennington and Windham.

The Massachusetts Division—District 1, county of Suffolk; district 2, county of Essex; district 3, Middlesex; district 4, Norfolk; district 5, counties of Bristol, Plymouth, Barnstable, Dukes and Nantucket; district 6, counties of Worcester and Franklin; district 7, counties of Hampden, Hampshire and Berkshire.

The Rhode Island Division—District 1, county of Providence; district 2, counties of Bristol, Kent, Newport and Washington.

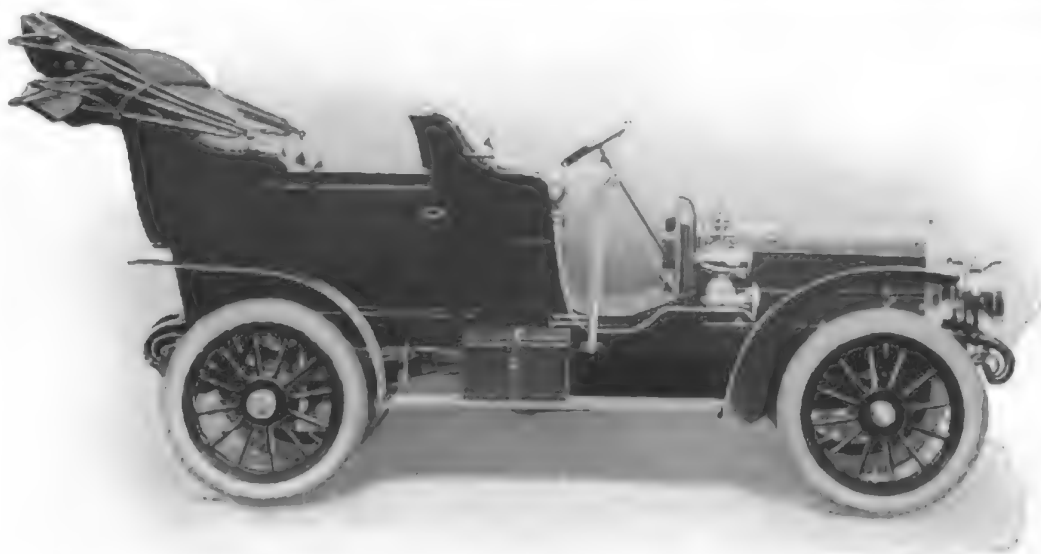
The Connecticut Division—District 1, county of New Haven; district 2, counties of Fairfield and Litchfield; district 3, counties of Hartford and Middlesex; district 4, counties of New London, Tolland and Windham.

The New York Division—District 1, county of New York; district 2, counties of Kings, Queens, Suffolk, Nassau and Richmond; district 3, counties of Westchester, Putnam, Rockland, Orange, Sullivan, Ulster, Greene and Dutchess; district 4, counties of Albany, Schoharie, Schenectady, Montgomery and Fulton; district 5, counties of Rensselaer, Columbia, Washington, Saratoga, Warren, Essex, Clinton, Franklin and Hamilton; district 6, counties of St. Lawrence, Jefferson, Lewis, Herkimer, Oneida, Madison and Otsego; district 7, counties of Delaware, Browne, Tioga, Tompkins, Cayuga, Chenango, Cortland, Onondaga, Chemung, Schuyler, Seneca, Wayne and Oswego; district 8, counties of Steuben, Yates, Ontario, Allegany, Wyoming, Livingston and Cattaraugus; district 9, counties of Monroe, Orleans, Genesee and Niagara; district 10, counties of Erie and Chautauqua.

Further announcements, covering the states of New Jersey, Pennsylvania, Delaware, Maryland, Ohio, Indiana, Michigan, Iowa, Illinois, Wisconsin, Minnesota and Missouri are being prepared and will follow, in these columns, from week to week. When all this work has been completed the league can go ahead in its scheme for the completion of a powerful organization that will work for the good of motoring. The officers of the A. M. L. have received every encouragement in the advancing of their work and it is expected that the board of officers in each division will show an active interest in the work.

Digitized by Google

WINTON



Up-Keep, Flaws in Material, and Safety

No human being, no matter how expert, can tell by **looking** at a piece of metal whether it has a flaw in its center.

But every flaw is always discovered—sooner or later—when the metal is subjected to **strain.**

Perhaps **you** discover the flaw when a break occurs miles from home. That compels you to come back by train, to have the car towed in, and to buy new parts to replace those broken. **Three different expense items** all at once. And all due to **one** flaw—perhaps a small one—that the automobile maker **didn't know was there.**

And there's no telling how often during a season these breaks may occur. But every time they do occur, your **expenses increase** and your **enjoyment decreases.** There is no pleasure in using a motor car that eats into your bank account for **breakages** and is likely at any time to leave you **stranded** away out in the woods.

But there is pleasure in using the **new Winton Model K.** And safety, too. No repair bills, no tow home, no coming back on the train because of flaws in material.

Because we **do not guess** that our material is flawless. We **know** it. For Winton Model K material is **severely tested before we put it into the car.**

We use a Riehle Testing Machine that exerts a strain up to 200,000 pounds (100 tons) to the square inch. And any material that withstands our test **will never break** under lighter strains **on the road.**

The time to discover **flaws** in material is **before** that material gets into a **motor car.** Not when carrying a load of **precious human life.**

If you recognize the truth of that statement, your next car will be a Winton Model K, whose material is **tried and tested.**

Winton Model K—Four cylinder, vertical, water-cooled. 4¾ inch bore, 5 inch stroke. Individual clutch transmission. Winton Air Governor. Best systems of lubrication, ignition and carburization. $2,500 f. o. b. Cleveland. Catalog No. 2 is ready.

THE WINTON MOTOR CARRIAGE CO.

CLEVELAND, OHIO, U. S. A.

MEMBER A. L. A. M.

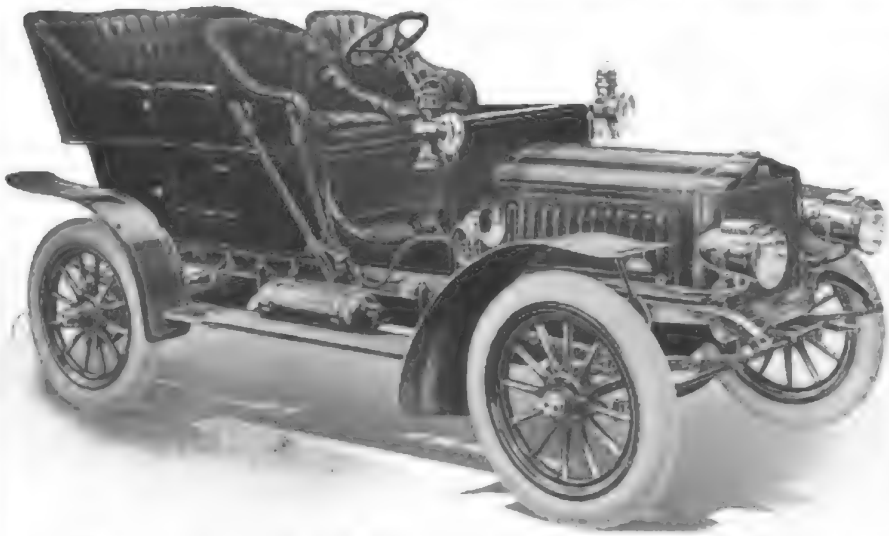
Winton Model K Transcontinental Exposition now en route, visiting all the big cities

Don't fail to see it

Digitized by Google

MITCHELL

"THE CAR YOU OUGHT TO HAVE AT THE PRICE YOU OUGHT TO PAY"



Model 4 B.

4-cylinder vertical motor.
18-20 H. P. actual.

No radical features, just a good, substantial, common sense and thoroughly tried out car that has made good in every particular.

Embodies the best features of the most famous cars—but is vastly different in at least one essential —price.

$1500

Correspondence with hustling dealers in each city solicited. We have commenced deliveries on

1906 MODELS

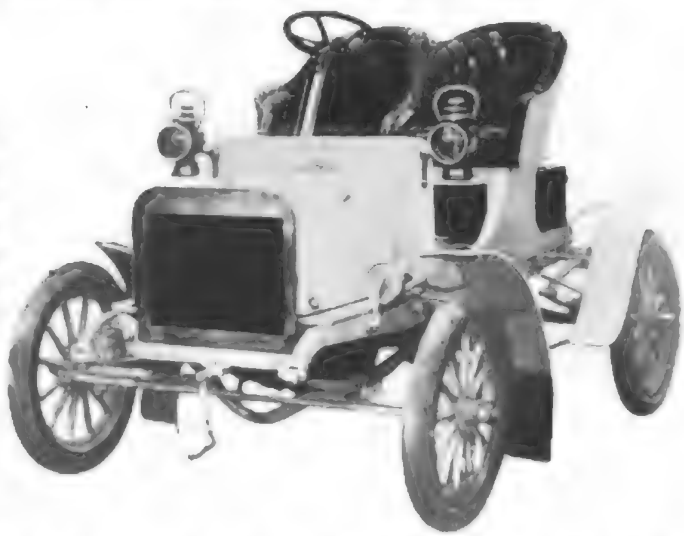
Considerably improved in appearance, and several valuable features added, but no pronounced changes in the construction of either model, as the success of both has been too decided to warrant it.

Model 2 B.

2-cylinder vertical motor, mounted in front.

No car at any price surpasses this magnificent Runabout in style, smartness of appearance or up-to-dateness. It is as carefully designed as any $3000 or $4000 car in the world, has ample power for every condition of road, climbs hills with perfect ease. Its hill climbing abilities are absolutely dependable.

$750



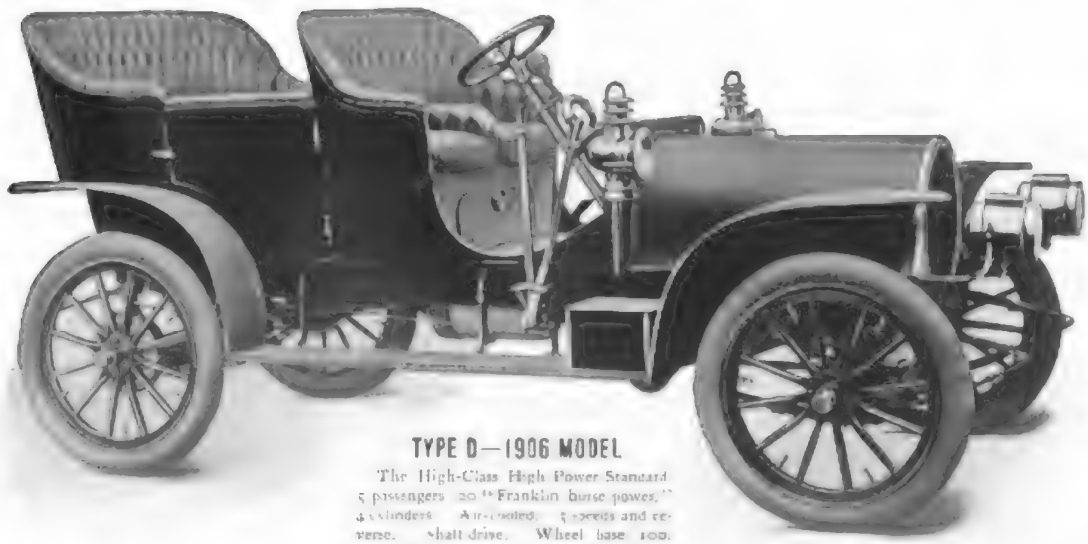
Write for 1906 catalog—the handsomest ever issued.

MITCHELL MOTOR CAR CO.

RACINE, WISCONSIN

Members American Motor Car Manufacturers' Association, Chicago.

Digitized by Google



TYPE D—1906 MODEL

The High-Class High Power Standard
5 passengers 20 "Franklin horse-power."
4 cylinders. Air-cooled. 3 speeds and reverse. Shaft drive. Wheel base 100.
Weight 1800 pounds. 40 miles an hour.
Price, $2800.

"FRANKLIN HORSE' POWER

"What's 'Franklin-power?'"
Horse-power, plus.
"Plus what?"

Many things:—Refinements, construction and design that put every ounce of power to work at the rear wheels; lightness, strength and springs that translate it into high speed and make it available on all roads—safe both for the passengers and the car.

"Franklin horse-power" is the kind that, put into one end of the problem, comes out at the other in a continuous mileage under all sorts of conditions and all through the year—which cannot be approached by cars of anywhere near their power-rating and price, and is seldom surpassed by any cars at any price.

Take the new 1906 Model D car shown above for example: No other car of any rating will carry five people farther, or easier in a day or a year on American roads. No car will carry them for so small an expense both first and last.

Franklin cars are built in every part of the best material for its particular purpose, which can be put into a car, without regard to cost. They cost 50 per cent more per pound to build than any other make of car, but cost far less to maintain and operate.

What they do and the money they do it for, makes them the most economical of all cars.

Four great models for 1906. Send for the book which describes them all.

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Association Licensed Automobile Manufacture

Digitized by Google

ANNOUNCEMENT

The 1906 Rainier

30-35 H. P.

has arrived. Come and inspect, ye automobile experts—you who really appreciate beautiful workmanship and design, and you will admit that at last THE American automobile has come. Look over the following specifications, then call and try the car:

Engine—30-35 H.P., 4-cylinder, water-cooled.
Ignition—Sims-Bosch Magneto. Make and break spark.
Transmission—Sliding train, 3 forward and one reverse.
Rear Axle—Bevel gear drive, clutch driven hub, ball bearings.
Front Axle—I beam section, ball bearings.
Frame—Cold rolled pressed steel, aluminum under-bonnet covering entire engine and transmission.
Wheel Base—104 inches.
Wheels—Imperial whalebone, grade A; 2d growth hickory.
Tires—Continental, 34x4.
Valves—Mechanically operated, inlet and exhaust interchangeable.
Carbureter—Float feed, requiring no adjustment.
Body—Full aluminum, double side entrance.
Brakes—Two internal expansion, dust protected, operating on rear hubs through emergency lever holding either forward or backward. Foot brake operates on propeller shaft. Both brakes phosphor bronze against steel.
Equipment—Two headlights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000

The 22-28 h. p., which was the hit of the season in New York, will be continued as heretofore without any changes. 4-cylinder, 98-inch wheel base, La Coste coil, French battery, Continental tires, aluminum side door body.

Price, $3,500

Both models guaranteed free of repairs for one year. The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for October and November delivery.

THE RAINIER COMPANY

Broadway, cor. 50th Street NEW YORK

Boston Agents, Morrison-Tyler Motor Co.

Good agents wanted in unassigned territory.

Digitized by Google

ANYONE CAN BUY CAST IRON AT TWO OR THREE CENTS A POUND AND MAKE AS BIG AN ENGINE AS HE HAS A MIND TO—AN ENGINE SO BIG THAT HE CAN AFFORD TO LOSE HALF OR THREE-QUARTERS OF HIS POWER BEFORE IT REACHES THE WHEELS AND STILL HAVE PLENTY LEFT

BUT it requires skill and skill of a very rare order to take a car of reasonable size, equipped with an engine of ordinary capacity, and so refine and improve its various parts, eliminating a little friction here and there, proportioning a water jacket or valve passage a little better, trimming a little weight all along the line, stiffening some part that springs and binds a wee bit in operation, reducing things generally to simpler forms, and finally producing a car that not only does all that it is expected to do, but some things that the big car *can't do*—avoiding tire trouble for instance—turning around in narrow roads, etc.

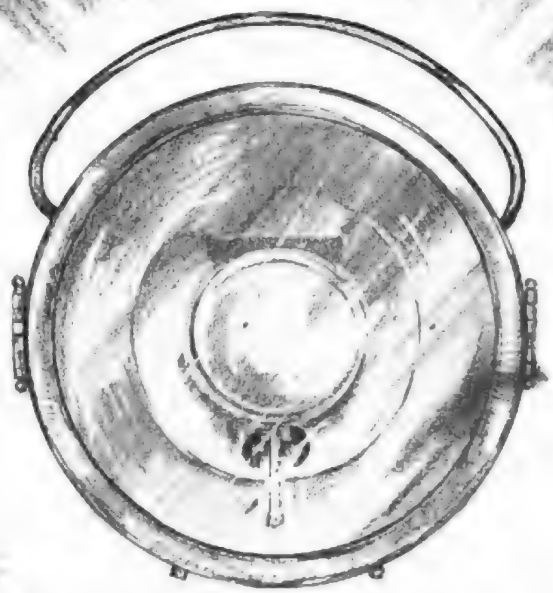
Now this is just what the designers of the Stevens-Duryea have done—they took the best known type, the most up-to-date car, and beginning where others had left off, they refined it. They decided that a loss of 30 to 50 per cent of the engine power before it reached the wheels was too much; they succeeded in reducing this loss to 10 per cent. They figured that if bicycles and buggies could be made strong without being made heavy, so could an automobile. They believed that lots of the sins charged to tires were really up to the automobile. They took each part and gave its size, weight, and functions careful consideration—some parts they made heavier—some they made lighter—and everywhere they cut down friction. The result—well, there is nothing in this country the size of the STEVENS-DURYEA that can touch it for speed or power on hills—nothing of its size that weighs its weight—nothing in the history of the automobile business that gets so great a mileage out of its tires—nothing that is as easily operated—nothing that will stand as much knock-about work on all sorts of roads with so little repairing.

These results come, not from good material nor good workmanship alone, but from a new, original, patented system of construction which is so far-reaching in its effects that we have given it a very complete exposition in our new booklet. The way these results were secured makes interesting reading and we'll be glad to send you a copy.

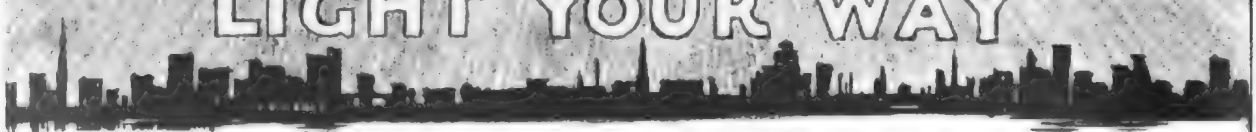
J. STEVENS ARMS & TOOL CO.
Makers of the "Twentieth Century Hustler"
705 Main Street CHICOPEE FALLS, MASS.
Member Association Licensed Automobile Manufacturers.

Digitized by Google

THE SHADES OF NIGHT ARE FALLING EARLY



LET
THE SOLAR
LIGHT YOUR WAY



BADGER BRASS MFG. CO., Kenosha, Wis.

WRITE FOR BOOKLET or ASK YOUR SUPPLY MAN

NEW YORK OFFICE, 11 WARREN ST.

Digitized by Google

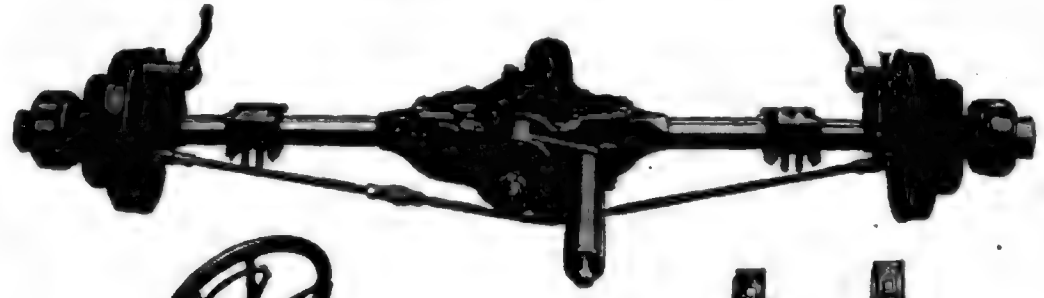
GARFORD TOURING CAR PARTS

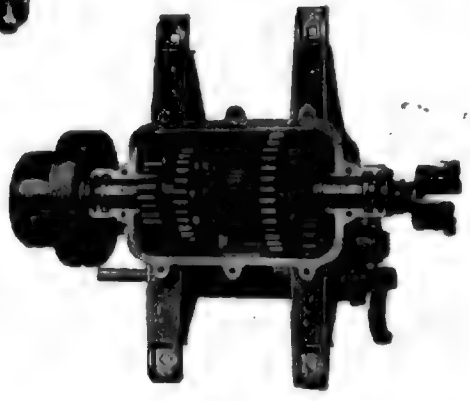
We don't wait for customers to test our parts before ascertaining if they are suitable for high grade touring cars. The model cars our engineers operate are given such severe service that the dependability of each piece is known to us in advance. Experiments are conducted at our own expense and risk. *Write for Circular No.12.*

One size for cars weighing up to 2,400 lbs., and of 30 H.P. Other size for cars weighing up to 2,800 lbs., and of 50 H.P.

The Garford Company—Elyria, Ohio

SALES MANAGER—HAYDEN EAMES, AMERICAN TRUST BUILDING, CLEVELAND





GARFORD PARTS

REAR AXLE, Ball or Plain Bearing
FRONT AXLE, Ball or Plain Bearing
CHANGE GEAR
STEERING GEAR
CLUTCH
PROPELLER SHAFT
DISTANCE ROD and Bracket
LEVERS for Emergency Brake and Change Gear

Digitized by Google

Pope Manufa

HART

1906 ANN

Pope-Hartford, Model F

Four Cylinder 20-25 H. P. Price $2,500

It is conceded by every one that the POPE MANUFACTURING COMPANY has never had the reputation of making extravagant claims for its product. Generations of special training in the famous Factories of Hartford have developed mechanics who are masters of every feature of fine machine work and with the world's best mechanics and the best talent it is possible to procure we have by experimenting, trying, testing and improving, counting nothing too small to receive attention and nothing too great to be attempted, produced our new MODEL F which cannot be excelled at anywhere near the price for quietness, speed and hill-climbing qualities.

Motor Four-cylinder vertical water cooled engine with all gears encased, the cylinders cast in pairs with integral heads and water jackets, developing under brake test 28-30 H. P. Valves located in the head all mechanically operated and interchangeable. Cylinders and pistons made of special stock and ground to a mirror finish thus insuring perfect compression. Crank shafts of special treated nickel steel with liberal bearings. Crank case supplied with two large hand holes on the right hand side of the case through which every bearing on the crank shaft is accessible.

Ignition Jump spark, combined commutator and secondary distributor located between the second and third cylinders and driven from the cam shaft through a pair of spiral gears with a single coil controlled by a lever located on top of the steering wheel but not revolving with the wheel.

Lubrication The lubrication of the engine bearings and cylinders is from a special oiler located on the dash driven by a belt from the cam shaft. The bearings of the transmission are provided with ring oilers running in individual wells at the ends of the shaft, and the transmission gears, bevel gears and differentials run in oil. (The oiling of these parts is referred to more particularly under their special headings.) All parts of the car not lubricated in this way or by splash are provided with oil or grease cups wherever necessary.

Transmission The transmission is of the sliding gear type having three speeds ahead and reverse and is enclosed in an aluminum case with an aluminum cover which is readily removed for inspection purposes. The gears are all made of special steel hardened. The countershaft has three large bearings substantially bolted into the case and without any opening through the ends of the case. All bearings are of special grade phosphor bronze and the gears and bearings with the exception of the front and rear main bearings are immersed in oil, the front and rear bearings being lubricated from two oil wells in the bearing case, the oil being carried by a ring to the shaft. The gears shift by a l located on the right hand side of the seat, operating throug and pinions, a rack on the inside of the gear case bein connected with the sliding gears, the thrust at this point b up by a substantial ball thrust bearing.

Carburettor The carburettor is of special desi our own manufacture, very flexibl cient running from 150 R.P.M. to 1600 R.P.M. and u economy of fuel consumption. Carburettor throttle is co a lever located on top of steering wheel and not revolving

Control Controlling levers for ignition and throttle on top of the steering wheel engaging wi sector arranged so as not to revolve with the steering gears changed by one lever located within easy access of t

Drive A compensating joint is located between the transmission, and the drive from the tran through a longitudinal or propellor shaft having univers either end through a pinion and bevel gear to the rear a joints are so arranged that all bearing surfaces are lubricated at all times. All parts of the joints and shaf of special high carbon steel with liberal pins which work i phosphor bronze bearings.

Front Axle The front axle is a solid forging steel having forked ends to receive The axle is of exceptional strength and extremely graceft

Rear Axle The bevel gears driving the rear axl a pinion meshing with a gear, bot pinion being made from special steel, the pinion shaft integral with the pinion and runs in two Timkin roll The rear axles proper or driving shafts have squared fit in square holes in the differential gears insuring stron ble construction. The shafts are securely keyed and loc outer ends in the wheel hubs and do not carry the w car but are solely power transmitters, the case and outer axle carrying the weight of the car. The thrust of the gear is taken up by a large ball thrust bearing suitabl by hardened steel washers and supported by the main be case.

Steering Steering mechanism consists of worn enclosed in a case packed with gra and is strictly irreversible. Steering joints provided buffers to relieve road shocks.

Brakes The car is provided with two sets of br external clamping band brake faced with belting and acting on a drum attached to transmission at the rear of the transmission case. The other set co internal band brakes which are also faced with camel's

Digitized by Google

ıring Company

.D, CONN.

POPE Hartford AUTOMOBILES

UNCEMENT

and act in drums which are bolted to each rear wheel hub. The brakes are all of ample proportion and of strong and powerful construction, either one of them being capable of locking the wheels with a very slight pressure on the foot levers.

Frame The frame is composed of armoured ash side pieces 1 5-16 by 4 inches at the centre. The armour consists of steel plates 3-16 inch thick securely bolted to the side pieces after all the riveting, which is done hot, is completed. The sub-frame which carries the engine is made of channel steel securely riveted to steel cross members at either end.

Hood and Guards Hood of improved design opening from both sides. Guards of special design, front guard large and flaring.

Body The body is of new and graceful design seating five people, with non-removable dust-proof tonneau with double side entrance especially easy of access.

Dash This is of curved sheet steel reinforced with wood, finished in natural color and surmounted by a brass rail.

WHEEL BASE Wheel base is 98 inches and the tread 56 inches.

Wheels 32x4 front and rear with ball bearings of large dimensions.

Tires We will adopt for our regular equipment what we determine to be the best tire on the market from actual tests we are now making.

GASOLINE CAPACITY 15 gallons.

WATER SUPPLY 5 gallons.

EQUIPMENT Full set of lamps, horn, tools and floor mats.

Pope-Hartford, Model G

Two Cylinder 18 H. P. Price $1,600

Motor Two-cylinder horizontal opposed, located cross-wise under the hood with integral heads and water jackets, developing under brake test 20-22 H. P. Automatic admission valve and mechanical exhaust. Cylinders and pistons made of special stock and ground to a mirror finish as in the Model F. Crank shaft of special treated nickel steel with bearings of liberal size.

Ignition Jump spark from two sets of dry cell batteries carried under front seat.

Lubrication Engine bearings and cylinders are lubricated by a special oiler located on dash driven by a belt from the cam shaft. The bearings of the transmission are provided with ring oilers running in individual wells at the ends of the shafts. The transmission gears, bevel gears and differentials run in oil. In addition to this there are oil and grease cups provided wherever necessary.

Transmission The transmission is of the sliding gear type and identical with the transmission used on our Model F.

Carburettor The carburettor is of entirely new design of the float feed type very simple and very efficient and flexible.

Control Spark and throttle levers located on top of steering wheel. All gears changed by one lever located within easy access of the driver.

Drive The drive is through a longitudinal or propellor shaft having universal joints at either end through pinion and bevel gears to the rear axle.

Front Axle The front axle is a solid forging of special design with forged yokes and exceptionally strong in all its parts.

Rear Axle The rear wheel axle is of solid steel running on ball bearings in a tubular sleeve and of same style and construction as Model F.

Steering Wheel operating through worm and sector. Strictly irreversible, joints provided with spring buffers to relieve road shocks.

Brakes Two sets of brakes, one an external hand brake acting on a drum attached to transmission shaft at rear of transmission case; the other set consists of two internal band brakes acting on drums bolted to each of the rear wheels.

Frame The frame is composed of ash armoured with steel plates securely bolted after all riveting, which is done hot, is completed. The sub-frames and cross members are of steel making a very strong and flexible frame.

Hood and Guards Of improved design constructed of steel, front guard large and flaring.

Body Of graceful design seating five people, double side entrance type with non-detachable tonneau.

WHEEL BASE 88 inch, tread 56 inch.

Wheels 30x3½, front and rear, with ball bearings of large dimension.

Tires We will adopt for our regular equipment what we determine to be the best tire on the market from actual tests we are now making.

GASOLINE CAPACITY 11½ gallons.

WATER SUPPLY 4 gallons.

Equipment Two side oil lamps, two head light brackets, full set of tools and floor mats.

Digitized by Google

MONOGRAM
OILS AND GREASES

Of the Twenty Cars entered in the
Vanderbilt Cup Race
SIXTEEN, including the Winner,
used MONOGRAM OIL

Can we say more?

MANUFACTURED BY

Columbia Lubricants Co.
of New York

78 BROAD STREET, NEW YORK CITY

DISTRIBUTING DEPOTS

Boston, Cleveland, Washington, Chicago, Denver, San Francisco, Toronto and London

Digitized by Google

THOMAS 1906

A Personal Statement from Mr. E. R. Thomas

"Hitch Your Wagon to A Star"

My friends have long known that it has been my cherished ambition to build the best car in the world or, at the very least, one of the greatest.

I do not mean the fleeting reputation gained by enormous outlays for advertising and the performance of road and racing stunts by highly paid employees with special cars or well groomed individuals of social and business prominence always accompanied by factory experts. But I do mean the permanent reputation founded by actual performance in the hands of the general public which comes solely from intrinsic merit.

Years ago—surrounded by noted mechanical talent—we built one of the greatest bicycles of the world, which was better than any foreign continental production. The principles of automobile construction are the same except mechanical power is substituted for human. Since 1897 I have been building vertical gas engines by the thousands. Then why not at least one of the best automobiles?

I knew that with us it was only a question of design, material and time. It was not a question of experience in fine workmanship. We had that. Nor was it a question of profit for that would surely follow.

In 1904 daylight began to appear. Two cylinder vertical motors were the vogue. I went one better and built three at the same price. It was far superior to any two cylinder proposition on this side of the world or the other.

Design was greatly improved, crude and accessory manufacturers improved their material, the car proved highly efficient and the star we had "hitched to" seemed nearer and brighter. It was in this year that I designed the safety device which has saved lives—also the curved dash with small tool lockers and the chain pull that equalizes the strain on the main bearings. We also used chain oilers on the crank and transmission shafts.

In 1905 we built a four cylinder car which, with nominal advertising, no traveling agents, and no performance of road or racing stunts, requiring special cars and highly paid factory experts, we again caught the public favor and quickly sold four hundred big touring cars—no more and no less. We were compelled to refuse many additional orders, some with bonuses above the price of from $250 to $750.

It was in this year I patented the now famous dust proof body and introduced lockers and rails for wraps and many other features of comfort and efficiency.

The result in every way exceeded my most sanguine expectations and the star shone still brighter and was much nearer.

Our success was so great I have about completed a new model fire-proof factory, constructed entirely of concrete, steel reinforced. The mechanical equipment has been greatly increased. The capacity is One Thousand Fifty Horsepower Automobiles per annum.

I have the same superb mechanical force who are inspired by the same ambition and who are co-operating with me loyally and energetically to realize our high ideals and which we believe will be fully realized in the 1906 Thomas Flyer, which has been greatly improved in every detail of workmanship, material and design—notably:

Forged I beam axles—great, strong steering knuckles—steering apparatus all forged—no brazed joints. Cross steering rod behind front axle. Large separate motors. Mechanically operated valves opposite sides. Improved radiator, fan and pumps. A disc clutch that will not slip under any condition when engaged. Four forward speeds—with one Hyatt roller and five Hess Bright bearings. Altogether fifteen Hess Bright ball bearings, one Hyatt roller and two ordinary ball bearings—twenty-one anti-friction bearings in all. A beautiful new dash and body seating five or seven as desired. Four great big wide brakes—the foot alone will stop a loaded car on a twenty-five per cent down grade.

I am very proud of the New 1906 Thomas Flyer—and I believe the American public will be proud of it. The best foreign cars may have some few unimportant details that we haven't got—and we have some important ones they do not possess. But we have put the design, material, workmanship and money into this car to make it at least equal to the highest priced car in the world, and I believe that the verdict of a just people will, based upon intrinsic merit solely, place the 1906 Thomas among the world's greatest and best, and as such I present it.

E. R. THOMAS,

For The E. R. Thomas Motor Company.

E. R. THOMAS MOTOR COMPANY

1202 Niagara Street — **Members A. L. A. M.** — **BUFFALO, N. Y.**

Digitized by Google

THE Darracq AUTOMOBILE

HEMERY IN HIS DARRACQ RACER
WINNER OF THE VANDERBILT CUP

The Best Car Won The Vanderbilt Cup Race

The same superior qualities of speed and endurance that brought victory to our racer are found in every Darracq automobile.

Our touring cars are the pride of France, as every one knows who has been abroad.

We simply ask your inspection.

Cars ready for immediate delivery.

American Darracq Automobile Co.

Controlled by F. A. LaRoche Co.

NEW YORK
652 HUDSON STREET
147 WEST 18th STREET

CHICAGO
THE RALPH TEMPLE AUTOMOBILE CO
309 Michigan Ave.

Digitized by Google

1906 ATWOOD LAMPS & GENERATORS

No Guesswork about ATWOOD LAMPS

WORKS OF ART

They are the result of 30 years of experience as builders of Good Lamps.

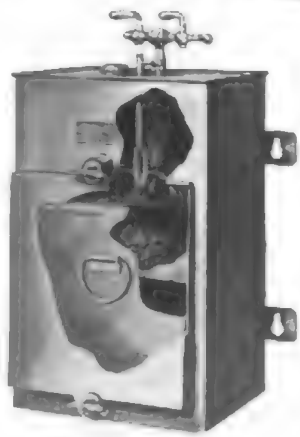
They cost a trifle more than the others, but they are worth the difference.

There is a REPUTATION behind them that stamps them "HIGHEST GRADE."

No Equal at Any Price

In an Acetylene Gas Lamp the Generator is the power behind the throne. If you have a good Generator you are certain of having a good light.

Atwood Generators surpass anything ever heretofore placed upon the market.



PATENT APPLIED FOR.

SIMPLE— EFFECTUAL

Every obstacle has been overcome.

ATWOOD MFG. CO.

WRITE US

AMESBURY, MASS.

Digitized by Google

Motor Age Circulation

How Many of Our Esteemed Contemporaries Can Show a Letter as Strong as This?

MILWAUKEE, WIS., Aug. 10, 1905.

Mr. N. H. Van Sicklen, care Motor Age, Chicago, Ill.

Dear Sir:—We shall consider it a great personal favor if you will send us the films taken by your representative of our car, and shall be pleased to pay you for them.

Evidently the Motor Age is extensively read, judging by the number of letters pouring in upon us from people who have seen your write-up.

Trusting you will be able to favor us, we beg to remain, very truly yours,

FOUR-WHEEL DRIVE WAGON CO.,
By H. Theo. Hansen, Vice President and General Manager.

The above cut represents postoffice receipts for 6,666 pounds net, of issue of October 5, 1905.

Each paper, including wrapper, weighed an average of 9½ ounces.		
6,666 pounds divided by 9½ ounces equals	11,227	papers
We also sold, **non-returnable**, to Western News Co. and news stands direct	672	"
Mailed under stamps to foreign addresses	89	"
Retained for office sales and distribution	350	"
Total for week of October 5	12,238	"

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	"
August 31, page 38, statement for August 17	12,176	"
September 7, page 29, statement for August 24	12,271	"
September 14, page 42, statement for August 31	12,518	"
	62,393	"

Average weekly edition for August, 12,468

September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	"
October 5, page 46, statement for September 21	12,283	"
October 12, page 52, statement for September 28	12,532	"
	50,141	"

Average September issues, 12,535.
Including the above for October 5, 12,238.

MOTOR AGE, *N. H. Van Sicklen*
Manager.

Digitized by Google

ELECTRICITY
Is Great Stuff To Steal Away

When it does this in your Spark Plug through the Soot Accumulation, your troubles begin.

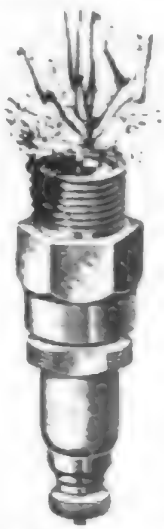
In the Soot-Proof PLUG

THIS WAS NEVER KNOWN TO HAVE OCCURRED

WHY?

1-32 OF AN INCH.

This is the amount of air space the current must overcome in order to spark.



WHY?

ONE FULL INCH

of soot deposit. This is what the current must overcome to short circuit.

But One Full Inch of Soot Deposit Offers More Resistance to the Current Than

1-32 inch of air. Hence the "SOOT-PROOF PLUG" Does Not and Cannot Short Circuit.

1/32 INCH

G. A. MEZGER 203 W. 80th St. NEW YORK

1 INCH

Digitized by Google

INTRODUCING THE NEW Yale

Four Cylinder

Five Passenger

35 Horse Power

2,400 Pounds.

Price complete $2,800 F. O. B. Toledo

When you are introduced to the "New Yale" you will take off your hat. We know you will, for our 1906 automobile is an aristocrat in appearance and a Hercules in power. However, if you will not take off your hat on first sight, we'll take you for a ride, and we know you'll take it off then. If you don't, we'll simply open the throttle and blow it off.

We expect to sell our entire output to men who are "from Missouri."

We ourselves have been delighted in the speed and action of our 1906 car and we are no easy ones to please. The "New Yale" had to show us just as it will have to show you and we are ready to talk business.

We have some desirable unoccupied territory and would be pleased to make appointments with established agents to call at our factory, where they will be initiated into the "show me" method. Particulars by letter.

BRIEF SPECIFICATIONS

Wheel base, 104.
Engine, 4 cylinder, water cooled.
Wheel steer, new control.
Speed on direct drive, 4 to 55 miles per hour.
Wheel, 34x4
Transmission slide gear. Three speeds forward and reverse.
Pressed steel frame.
Pressed steel sub-frame.
Springs, 2x46 front, 2x54 rear.
Chainless drive.

Write for photographic reproduction of the car.

THE CONSOLIDATED MANUFACTURING CO.

Successors to the Ark Manufacturing Co.

TOLEDO, - - - OHIO

Digitized by Google

A RANGY LINE

1906

JACKSONS

THREE MODELS
"C," "D" AND "G"

RANGE OF PRICES
$1250, $1500, $2500

RANGE OF POWER
FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE
90"——100"——108"

Plenty of Style, Strength and Speed

MODEL C
2 cylinders opposed, 5¼"x5", motor under body, wheel base, 90 inches; chain drive.
Price, $1250

MODEL D
A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.
Price, $1500

MODEL G
40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.
Price, $2500

LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

A Live Line For Live Dealers : : : : : WRITE

JACKSON AUTOMOBILE CO.
JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

DEALERS

During 1905 we built and sold more than 4,000 Cadillac cars.

Not one purchaser of these cars is willing now to let his "bargain" go at less than the price he paid for it.

For 1906 that name

CADILLAC

will possess more than ever before a magic meaning to live dealers.

There are hundreds of towns in the U. S. where Cadillac cars have never been sold. We want an agent in each of these localities and if **you** are a **good business man,** you will at once get in touch with us. No line was ever so attractive as ours will be for 1906.

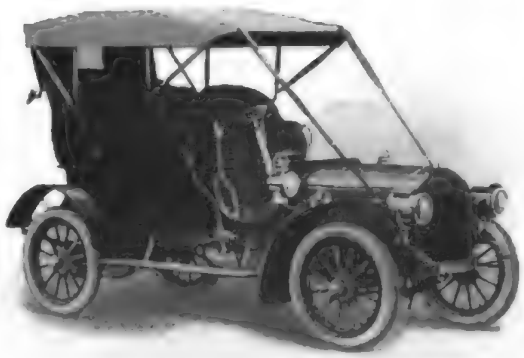
WRITE TODAY

Cadillac Automobile Co.
Detroit, Mich.

Digitized by Google

The

HAYNES



Car that Won Honors

from America's best and most powerful special racing cars, in the VANDERBILT Trials, was simply a duplicate of our 1906 Touring Cars now going through the factory.

If THE HAYNES stock car defeats racers, what will it do to other stock cars?

We are booking orders and contracting agencies NOW for these cars.

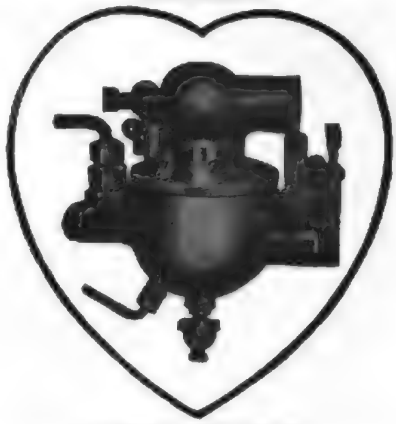
Write us today.

The Haynes Automobile Co.

MEMBERS A. L. A. M.

New York KOKOMO, INDIANA Chicago

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ½" to 3".

Schebler carbureter with balance throttle to be used with a governor.

Schebler two-cycle engine carbureters.

Schebler Special for Cadillacs.

Oldsmobile carbureters.

Ford two-cylinder carbureters.

Autocar Runabout carbureters.

Franklin Automobile carbureters.

Standard sizes for all other motors.

Special fittings for attaching the Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

LIST OF AGENCIES

P. J. Dasey.....431 Wabash Ave., Chicago, Ill. Factory Rep.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, Rhode Island
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Elec. Supply Co.....Washington, D. C.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station.....3425 N. Broad St., Phila., Pa.
Auto Supply Agency.....3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co.....New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chandler & Lynn Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Nell & Co.....38 Fenchurch St., London, England.

Digitized by Google

MICHELIN

Another Great Victory

for the famous

Michelin Tires

Vanderbilt Race

Fifty per cent of cars finishing race were on Michelin Tires.

Wonderful record of speed and stability goes to Michelin.

Not a bursted tire on a single car that was equipped with Michelin Tires.

Michelin Tires are the safest and strongest tires in the world, and their superiority is now incontestable.

MICHELIN TIRE AMERICAN AGENCY, Inc.

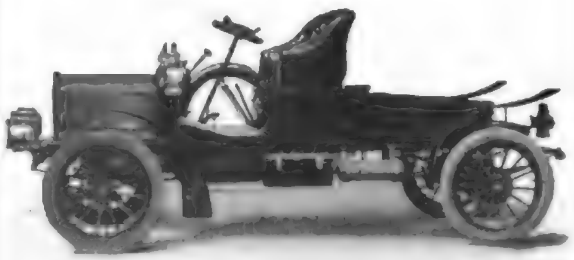
6 West Twenty-Ninth St., NEW YORK

E. D. WINANS, General Manager. Telephones 780-781 Madison Sq.
Branches in all large cities of the United States

THE INCOMPARABLE

WHITE

THE CAR FOR SERVICE



THE WHITE RUNABOUT

If seating capacity for two is sufficient for your needs, you would do well to inspect critically the White Runabout. It, of course, possesses all those qualities of simplicity, durability and reliability which have made the White the favorite touring car of this country. In addition, is the increased speed which results from the lessened weight. The price, furthermore, is less than that of our touring car. The White Runabout should certainly appeal strongly to those who wish a stylish, speedy and silent car.

Write for Further Details
Regarding Price, Weight, Etc.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

G&J TIRES

The Strongest Tires Made—because only the best of materials are used in their construction.

The Most Comfortable Tires—because most resilient.

The Most Economical Tires—because, being resilient, they increase the power of the engine, and reduce the consumption of fuel.

The Easiest Tires to Handle—because no tire clamps are used.

Write for Catalog and Tire Manual

G&J TIRE CO.

Indianapolis

Boston Buffalo Cleveland Detroit Chicago Denver San Francisco

The Daimler Manufacturing Co.

announces that it is now ready to book orders for the

1906 American Mercedes 40-45 H. P.

Through our sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company—THE DAIMLER MOTOREN GESSELSCHAFT, of Unterturkheim, near Canstatt, Germany, we produce **the only authorized copy, part for part, of the**

1906 Mercedes

AUTOMOBILE

All the shop drawings of the 1906 Mercedes, showing the latest changes and advances embodied in this celebrated car, are now in our hands, awaiting your examination.

SAVE THE DUTY

DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, LONG ISLAND CITY, N. Y.
NEW YORK CITY GARAGE, 10 West 60th Street

Digitized by Google

Business and the Oldsmobile

The development of the Oldsmobile as a public utility has been steady and uninterrupted.

The Oldsmobile Standard Runabout meets the requirements of the business and professional man, the rural delivery carrier, the commercial traveler, and is an indispensable adjunct to modern life.

The Commercial Vehicle has reached the highest development in the Oldsmobile.

You will find in our line the vehicle which most fully meets your requirements, whether for city or country delivery, light trucking, city or rural transportation, depot or park service.

Write us for full information and details. There is big money to be made with our commercial cars and it will pay you to get in the game early.

Ask for Circular 52.

OLDS MOTOR WORKS

Member Association Licensed Automobile Manufacturers

Lansing, Mich., U.S.A.

A few interesting facts regarding the new MODEL D

STODDARD-DAYTON

"A Marvel of Simplicity and Mechanical Construction"

Motor—4 cylinders separately cast. Mechanically operated valves. Motor accurately balanced and develops up to 36 horsepower under brake test.

Transmission—Sliding gear type, 3 speeds and reverse. Timken roller bearings, dust and oil-proof aluminum case. Gears case-hardened steel forgings, properly cut and chamfered.

Ignition—Jump spark. Two storage batteries. Coil on dash. Concealed wiring. Special terminals.

Control—In this feature WE LEAD.

Gasoline and spark levers are located directly under the wheel and are operated with the left fingers without taking the hand from the wheel.

Change gear lever works in H slot and is positive, permitting of change speeds without intermediate steps.

Foot brake and clutch treadles.

Emergency brake lever next to change speed lever.

BRAKES—Three powerful ones of large diameter—one on transmission; two on rear wheels—all encased.

Frame—Pressed steel. High carbon hot rolled stock. Deflection impossible.

FRONT AXLE—Special I beam section one piece, with yokes. Drop forged spindles and arms.

REAR AXLE—Clutch drive type. Extended hubs on differential casing running in roller bearings. Driving axle carries no weight. Timken roller bearings in wheels.

Propeller shaft encased in steel tube, which acts as torsion lever. Gears and bearings adjustable.

Springs—Special stock—40-inch front, 50-inch rear, 2-inch wide—all semi-elliptic.

Wheels—Artillery pattern; 32x4 Timken roller bearings throughout.

Tires—Any standard American make.

Body—Large, roomy tonneau, well made throughout. Capacity five passengers. Same lines as 1905 model.

Finish—Stoddard-Dayton Pearl Gray standard. Other colors to specifications.

Trimming and painting in our own shops.

Wheel base 103 inches. Gasoline 15 gallons.

Metal grease pan under motor.

Weight 2,100 pounds.

Price $2,250 F. O. B. Dayton, O.

A careful examination of the new Model D will show clearly the proper distribution of metal—which enables us to produce a 2,100-pound machine embodying an exceedingly high factor of safety and with the powerful motor gives 1 horsepower to approximately each 59 pounds dead weight. We have therefore succeeded in keeping the weight down and power up—a feature of the greatest value.

Advance Booklet now ready. Complete and detailed Catalogue later. Few good Agents wanted in unoccupied territory.

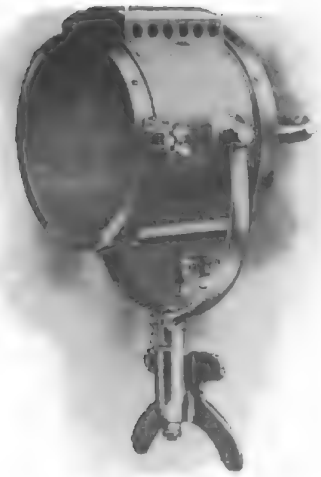
CHICAGO, McDuffee Auto Company BOSTON, Randliff Motor Car Co. INDIANAPOLIS, Frank L. Moore

NEW YORK (After November 1st), Stoddard-Dayton Agency, 60th and Broadway

DAYTON MOTOR CAR CO., DAYTON, OHIO

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google



SEARCHLIGHT SWINDLERS

The success of the Rushmore Lens Mirror Searchlight has been so complete that as a matter of course the lantern makers have been compelled to either try to imitate it or go out of business.

A number of them have conspired to keep us out of the automobile shows, have claimed that we do not make the celebrated Rushmore Lens Mirror and that they get their cheap flat lenses from the same place, and have resorted to every contemptible trick to deceive people into buying their trash.

Certain so-called jobbers have tried to push the sale of the imitation lights by issuing lists of what are insinuated to be our prices in comparison with their alleged cheap prices. The statement that we ask the prices quoted is a deliberate and malicious lie. The prices they offer are but a few cents lower than ours, while the fake lights they offer are by comparison not worth their weight as junk.

Some of the fake jobbers refuse to furnish the Rushmore light when requested to do so on the plea that we cannot make delivery. That statement is likewise a deliberate lie. They offer to refund your money if not as represented, but you had better hold on to your cash.

We do not ask any money in advance, but will send the Searchlight on ten days' free trial to anyone worthy of credit. The fake jobber can make but 25 per cent to 30 per cent on the Rushmore, while he clears 100 per cent to 200 per cent on the fake lights which he obtains on consignment. Do you wonder that he is willing to cheat you?

Our prices are the lowest for the quality and we ship from stock.

RUSHMORE DYNAMO WORKS, = Plainfield, N. J.

KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

The Hartford Perfected Dunlop Tire

Paris, July 28, '05.

Dear Sirs:-

We have arrived in Paris coming over the Route Nationale from Aix les Bains via Lyons and Nevers. The roads were exceedingly trying, very hard and a lot of "pave" or cobblestones. I had two punctures. These were the only mishaps in 2136 miles and the tires have stood the hard work without showing any other signs of wear and tear. People here consider this a very good record as many of the best foreign tires blow out from the heat.

Yours truly,

Walter Hale

Postal
No. 3.

Watch for others to follow.

The Hartford Rubber Works Company, Hartford, Conn.

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

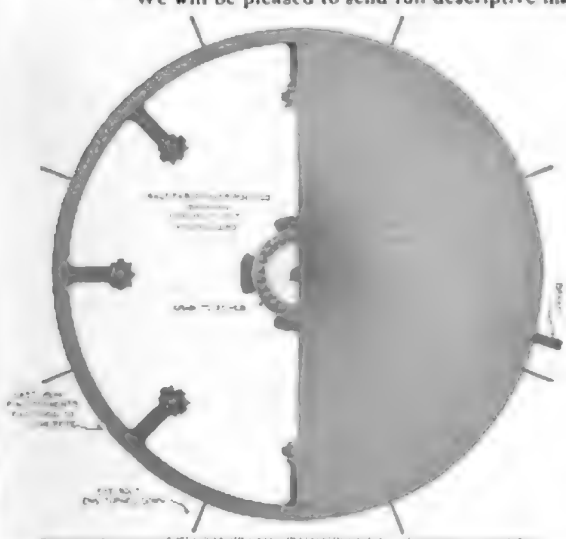
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

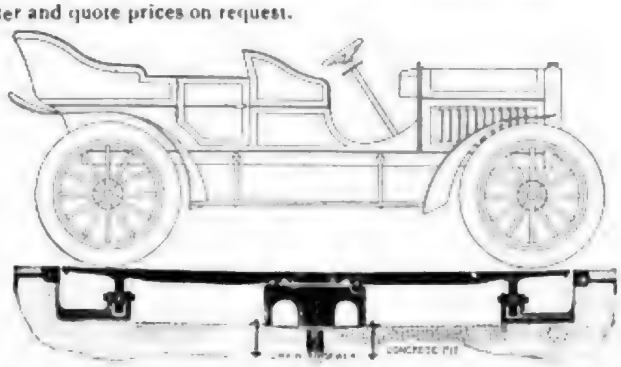
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

Digitized by Google

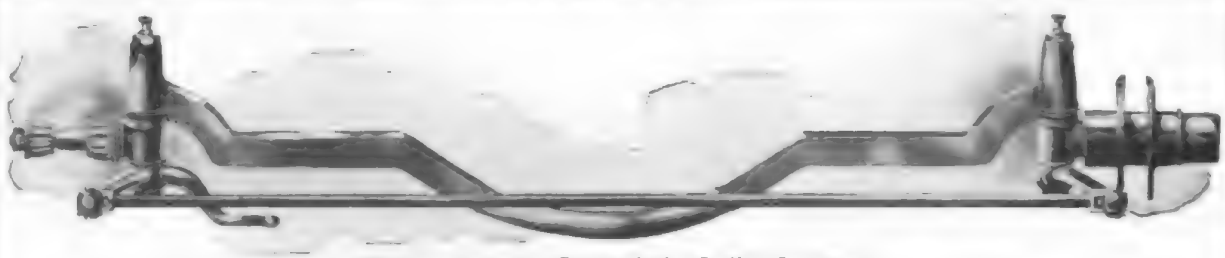
The only set of Tires which finished in the Vanderbilt Race without change or injury or attention of any kind was

Diamond

WRAPPED TREAD

on the Locomobile driven by Joseph Tracy

THE DIAMOND RUBBER CO. AKRON OHIO



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

Digitized by Google

Are YOU a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date. There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season.

We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

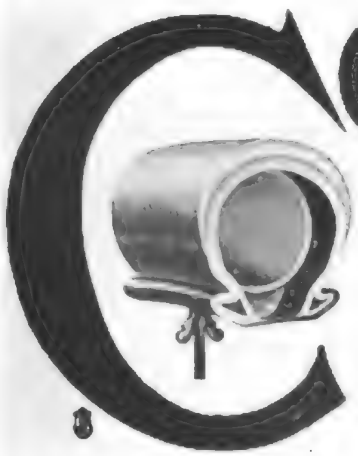
Write and get in touch with us.

FORD MOTOR COMPANY :: Detroit, Michigan

Members American Motor Car Manufacturers' Association, Chicago.

Canadian Trade supplied by THE FORD MOTOR CO. OF CANADA, Ltd., Walkerville, Ont.

For short bursts of speed almost any tire lives to see the finish.
For thousands of miles of rough roads



CONTINENTAL TIRES

are invariably the choice—because there is enough of the right kind of material in their make-up.

THE CONTINENTAL CAOUTCHOUC CO.

EMIL GROSSMAN, Gen'l Mgr. **43 WARREN ST., NEW YORK**

Factory, HANOVER, GERMANY

Digitized by Google

Glad to Get Back To GOODRICH TIRES

Mr. H C. Baxter of Walpole, N. H., in a letter of September 12, 1905, writes as follows:

"I am glad to get back to the use of your tires, after having satisfied my desire to test a foreign make, which I have found did not give me as good service on our country roads as yours, which I have used for years, have given me. I shall use your make in the future. At present I have a 24 h. p. Peerless, which I am using to make business trips between our canneries in New Hampshire and Vermont."

Yours truly,

H. C. BAXTER.

THE BAILEY "WON'T SLIP" TIRE.

Regular Goodrich construction, but provided with the Bailey "WON'T SLIP" Tread. Prevents slipping, slewing or skidding.

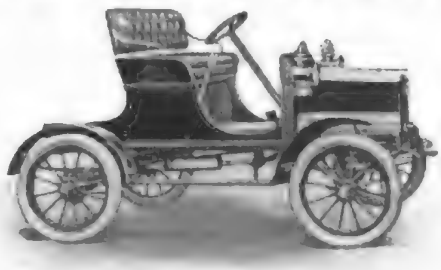
Rims branded in the channel with this copyrighted mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Company
Akron, Ohio

NEW YORK, 66-68 Reade St., and 1645 Broadway
BUFFALO, 781 Main St.
SAN FRANCISCO, 302 Mission St.
CHICAGO, 141 Lake St.
BOSTON, 161 Columbus Ave.
DETROIT, 89 E. Congress St.
LONDON, E. C., 7 Snow Hill.
CLEVELAND, 420 Superior St.
PHILADELPHIA, 902 Arch St.
DENVER, 1444 Curtis St.

Announcement '06

Model "E" 4 cylinder, 4 cycle, 35-40 h. p.



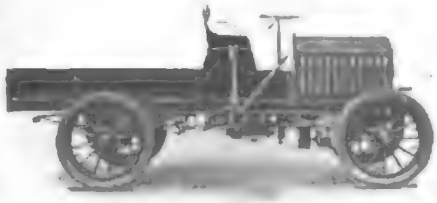
Model "G" 10 h. p. Runabout

We want good live Agents in every community

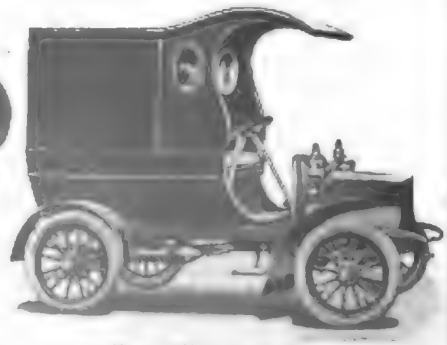
Our '06 line will comprise cars for every purpose.

All our line have beveled gear drive. Are all guaranteed for one year.

List, Model	"E"	$2,000
" "	"G"	650
" "	"F"	1,200
" "	"H"	750



Model "F" 18 h. p. Truck



Model "H" 10 h. p. Delivery.

Model "E" 35-40 h.p.	4 cyl.	4 cycle.	vertical
" "F" 18	"	2 "	4 "	horizontal
" "G" 10	"	2 "	2 "	vertical
" "H" 10	"	2 "	2 "	"

Address Dept. "C"

Wolverine Automobile & Commercial Vehicle Co.

DUNDEE, MICH.

Digitized by Google

Classification Distinctive ... WHY?

The Lightest, the Strongest, Most Durable, Most Efficient, Best Finished. Attractive in Rich Finish and Design, Simply Manipulated.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

THE BAKER ELECTRIC

SEND FOR OUR BK CATALOG

THE BAKER MOTOR VEHICLE CO. Cleveland, Ohio

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

PENNSYLVANIA PRC CLINCHER

The value of a Tire is measured not by dollars, but by the Odometer.

The Tire which travels furthest without repairs is the most valuable to YOU.

The Tire which carries your Car softly over the road is the most valuable to your MOTOR.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

REMY MAGNETO

The only American car in the Vanderbilt Cup Race fitted with a Magneto was the

LOCOMOBILE

which surely demonstrated the absolute dependability of its ignition system.

Most of the prominent foreign cars are equipped similarly.

Every motorist should equip his car with the

Remy Magneto

BECAUSE, AS A RESULT,

No time is ever lost having storage batteries recharged.
No holdup on country roads through rundown batteries.
No carrying of duplicate dry cells or storage cells.
No complex wiring system.

The Remy Magneto

is simplicity itself. One turn of the starting crank gives the armature sufficient movement to generate the spark. WRITE.

REMY ELECTRIC CO ANDERSON IND.

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
107 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN Runabouts
OLDS TOURING CARS
CADILLAC
FORD
THOMAS Models 17 and 22
GENERAL
YALE
AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

Digitized by Google

CORBIN CARS

For WINTER USE

Air cooling, which is highly desirable at all seasons, is especially advantageous when applied to cars for cold weather driving.

Corbin Model D Limousine
$3,000 to $3,500

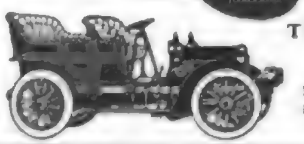
The Corbin Motor Vehicle Corporation

NEW BRITAIN, CONN.

NEW YORK, 4 West 38th St. BOSTON, 163 Columbus Ave. PHILADELPHIA, 629 North Broad St.

Digitized by Google

Locomobile

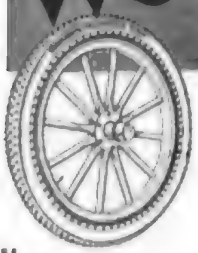


The Locomobile Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St
PHILADELPHIA, 240 N. Broad St.
BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave

WOODWORTH DETACHABLE TREAD



For Automobile Tires

Is the proper equipment for fall and winter use. prevents slipping and skidding on muddy or icy streets. It also protects the tires from hard, frozen roads. The treads can be put on without removing the tires from the wheels. They are held rigidly on the tires by side-wires which pass through the loops and are tightened by small nuts. No special tools or equipment are required to apply them—with a wrench and a pair of pliers anyone of ordinary ability can do the work.

Can be used on any pneumatic tire, no matter how badly worn, if it is strong enough to stand the air pressure.

You will need something for use for this fall and winter. Why not get the best thing there is?

They are not exorbitant in price.

WRITE FOR CIRCULAR.
GIVING DESCRIPTION AND PRICES

LEATHER TIRE GOODS CO.
NEWTON UPPER FALLS, MASSACHUSETTS

DANGER AHEAD!

It's a Great Comfort

To know that your light will never fail. Your gas cannot fail or ever waver, if you use the

PRESTO-LITE GAS TANK

Contains enough pure, cool gas to run two searchlights fifty hours. Recharged in a few minutes for $2.00. Never leaks, never freezes, never gets out of order. Looks well on any machine and may be attached at rear or side. Supplies any number of lamps. Instantly turned on or off.

July 28, 1906

Mr. F. C. Bowlus,
318 Baronne St., City.

Dear Sir:

Referring to your inquiry, would say that the Prest-O-Lite tank has given me no trouble whatsoever since its installation and has proved a great comfort.

Very respectfully,
New Orleans, La. DR. C. EDMOND KELLS.

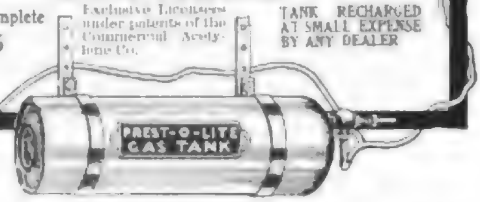
To be had of all dealers. Empty tank exchanged for full one by any dealer.

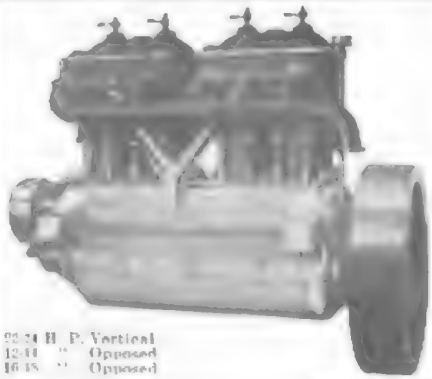
PREST-O-LITE COMPANY
INDIANAPOLIS
AGENTS IN ALL CITIES

Price Complete $35

Exclusive Licensees under patents of the Commercial Acetylene Co.

TANK RECHARGED AT SMALL EXPENSE BY ANY DEALER





22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

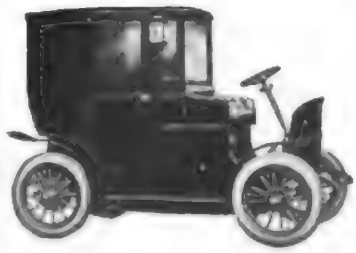
BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY

Members Association Licensed Automobile Manufacturers

Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co., 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

GAS-AU-LEC

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World

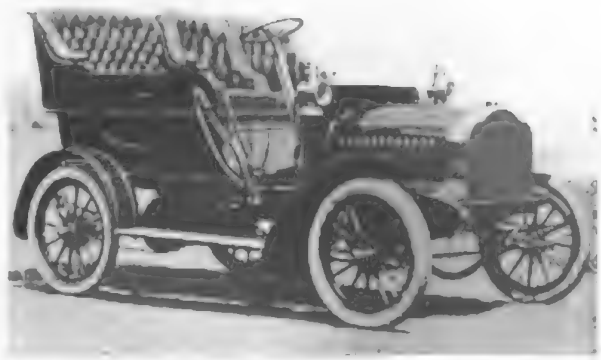
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

Compound MOTOR CARS



Model Four, $1,400

HALL BROTHERS

The E. H. V. Co., NORWICH, CONN.,
Middletown, Conn. Sept. 5, 1905.

Gentlemen:—The Compound that I purchased of you last Spring is giving excellent satisfaction. I have used it considerably cross country touring and find it both reliable and economical. I can cheerfully recommend the Compound to any one desiring a quiet, smooth running car.

Yours respectfully, F. B. HALL.

THE E. H. V. CO., MIDDLETOWN, CONNECTICUT

ADAMS-FARWELL

THE ALL SEASON CAR

3 Cylinder Motor 20-25 Horsepower
5 Cylinder Motor 40-45 Horsepower

Operated from rear seat or from folding front seat.
All windows may be lowered, making an open car.

Five Other Models - From $2,000 to $4,000

No Water No Radiator No Fly-wheel No Fan
No Muffler Automatically Governed

CHICAGO SALESROOM: 1536 MICHIGAN AVE.

The Adams Company, Dubuque, Iowa, U. S. A.

Digitized by Google

Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in WILKESBARRE, PA., will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
Holyoke, Mass.

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

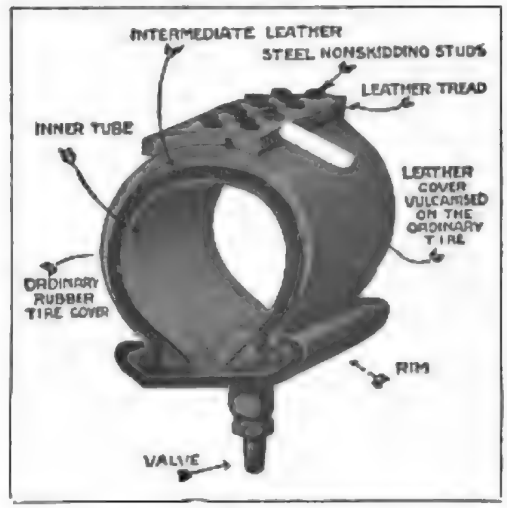
The Steel Ball Co., Chicago, Ill.

Gentlemen: We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

SAMSON
LEATHER TIRE
NON-SKIDDING :: :: PUNCTURE PROOF



A. E. GALLIEN, Manager
UNITED STATES BRANCHES:
New York: 12 West 33d Street — Chicago: 1461 Michigan Boulevard
Boston: 20 Park Square — Philadelphia: 1120 Chestnut Street

HAVE YOU SEEN THE NEW

KOKOMO

MECHANICALLY - ATTACHED

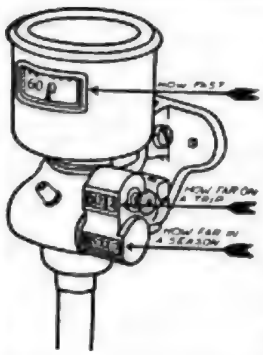
AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

Digitized by Google



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1881 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

DIETZ

THE
DIETZ
OIL LAMPS

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York
ESTABLISHED 1840

THE
Kellogg Multiple Gear Pump...

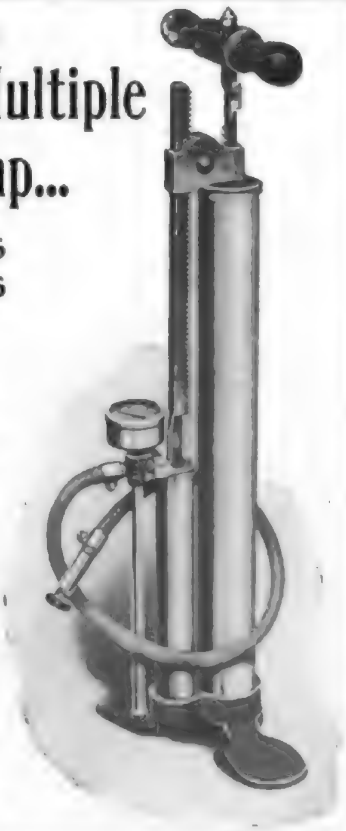
JOBBERS
DEALERS
USERS

This is the limit of perfection. ... 1906 Catalogue will soon be ready.

...Write...

WRAY PUMP & REGISTER CO.
191-193 Mill St.
Rochester, N. Y.

Or Brandenburg Bros & Alliger, 105 Reade St., New York City, 65 Lake St., Chicago, Ill.



BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

Peterson & Draper, 166 Lake St., Chicago, Ill.
Thos. J. Wetzel, 11 Warren St., New York. } Factory Salesmen.

Chas. E. Miller, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O. } Sales Agent Carrying Stock.

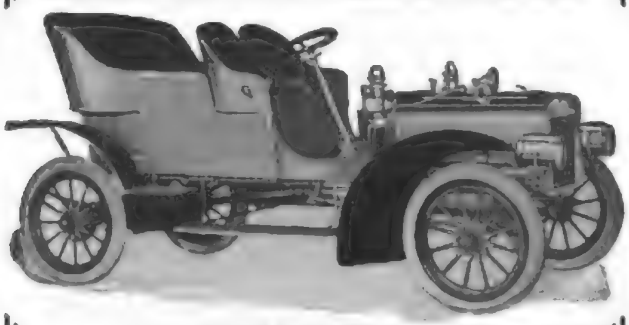
Post & Lester Co., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

200 South Geddes Street **SYRACUSE, N. Y.**

Digitized by Google

MOLINE



18-20 HORSE POWER

Model "B"—$1,600

Four cylinder vertical motor that develops more than the rated H. P. Pulls through heavy roads and up hills in a way that surprises the owners of higher-priced cars.

Has all the good features of most $2,000 machines and costs $1,600.

For the first time this season we can make immediate deliveries

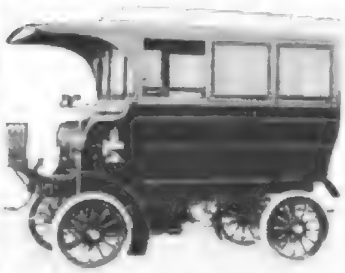
We have only a few of them left and they will go quickly. Perhaps our proposition might interest you.

Model "D"—Our stock of these substantial 12 H. P. Touring Runabouts is decidedly limited. The prices we are making is closing them out fast. If you want one, speak quick.

Moline Automobile Company

EAST MOLINE, ILLINOIS

The Waterless Knox



Always ready for use and can be used all day long any day in the year.

The Knox Patent Corrugated Pin System of air cooling is the **best cooling device extant** and the only one that **makes satisfactory all-the-year-round service** possible.

Knox 2-cylinder cars give **more speed** than most 4-cylinder cars of anywhere nearly equal horse power, but cost far less for up-keep and running expenses.

THE KNOX LINE offers the greatest variety of commercial car types, each one a proved success, the result of years of experience in making and selling automobiles for real service.

Catalog of Passenger or Commercial Cars on application.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers Gasoline Commercial Cars

Members A. L. A. M.

Why Premier Cars

Appeal to All Classes

To the Professional Man—because of its simplicity.

To the Business Man—because of its readiness to go at all times.

To the Repair Man—because of its perfect accessibility to working parts.

To All Men—because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5,000 recorded miles—is only a trifle over one cent per mile for the car, or 1-5 to ¼ cents per mile per passenger; total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

The Air Cooled Season never ends.

Side Entrance $1,500. Runabout $1,250

Our new [1906] Doctor's Special $1,425

Light Truck $1,400

PREMIER MOTOR MFG. CO.

1001 George St., Indianapolis, Ind.

Members American Motor Car Manufacturers' Association, Chicago

A TIMELY WORD TO DEALERS

THE Model A GALE $500

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer Knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS

Galesburg, Ill.

Digitized by Google

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the **two** cycle two cylinder Elmore engine. Understand—the **two** cycle two cylinder Elmore engine produces **two impulses every time the flywheel turns.** As you know, the two cylinder **four** cycle furnishes only **one** impulse every **fourth** time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

National
Motor Cars

In two new models improved and better than ever will be ready very shortly.

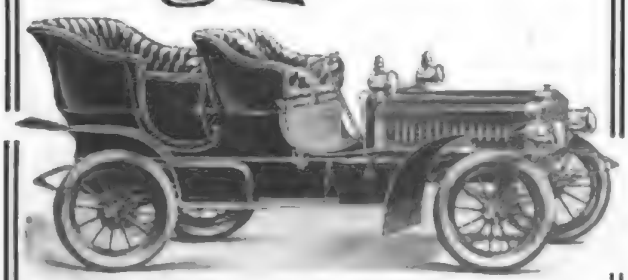
We have a surprise to offer which will make EVERYBODY

"Watch for the Round Radiator"

National Motor Vehicle Co.
1006 East 22d Street
INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.

THE LAMBERT



Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

FIREPROOF

PORTABLE
AUTO
HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co
107 West Monroe St. :: Chicago, Ill.

Digitized by Google

1906 SHAPE

WE EQUIP
Pleasure Cars
AS WELL AS
Commercial Cars
WITH

Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.

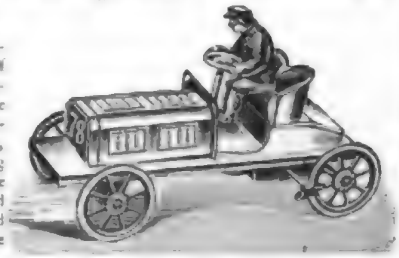
AKRON, OHIO

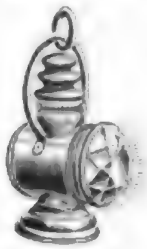
New York City, 1778 Broadway Chicago, 1208 Michigan Boulevard

Latest European Novelties

RACING CAR
No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.





No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber,
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES

Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

Pressed Steel Frames

AND STANDARD PARTS

Automobile Manufacturers using our pressed steel frames on their machines are always certain that they have the best of frames procurable in point of reliability. We have recently increased our capacity and are equipped to turn out our standard frames, or frames of special design, in quantities for early delivery. We have presses also for making heaving stampings and pressings of all descriptions and are prepared to do any work in this line. We also make a complete line of

Rear Axles, Front Axles, Clutches, Change-Gears, Propeller Shafts, Steering Columns, Hubs and Other Automobile Parts

A. O. SMITH COMPANY

MILWAUKEE, WISCONSIN

Hayden Eames, Sales Manager, American Trust Bldg. Cleveland, O.

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

25 Pound Pail $1.15

60 Pound Tub $2.50

Or in Barrels

HOFFHEIMER SOAP CO.

CHICAGO

Digitized by Google

AUSTIN

A LUXURIOUS CAR

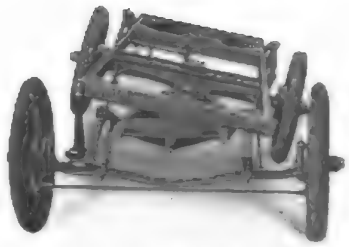
THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.
GRAND RAPIDS, :: MICHIGAN

Rear Wheel Raised Over a Foot



Lower Frame Level

Master of All Roads

No car fits this description unless it makes good its claims on rough roads. The only car that takes you over the roughest roads at good speed with a very luxury of motion and without incurring undue friction and binding strains in the mechanism is

THE MARMON

"A Mechanical Masterpiece"

It is the only car that is not built on the unyielding principles of a log wagon, and the picture illustrates the flexibility that places it in a class by itself, due primarily to the exclusive, patented feature

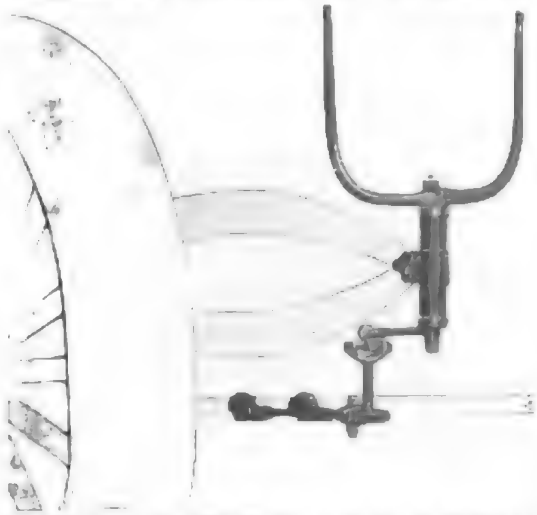
Double Three-Point Suspension

Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. No matter which wheels are raised, no matter which frame is tilted, the entire mechanism is maintained in perfect alignment, free from the twisting and binding strains inevitable in all other cars. Means greater efficiency and less wear on all parts, tires included. Four cylinders, air-cooled.

A carefully constructed, luxurious car for those buyers who exact the best of the high grade. :: :: :: :: WRITE FOR BOOKLET NO. 1.

NORDYKE & MARMON COMPANY, Indianapolis, Ind.
(Established 1851) *Members American Motor Car Mnfs. Ass., Chicago*

"Lights A Turn Before You Make It"



THE IMPERIAL-LYON Automatic Lamp Adjuster

Connected to and operated by the steering knuckle rod.
Makes the lamp move with the wheels.
Lights a turn before the body of the car swings around.
Lessens the dangers of night riding.
Will fit any make of car: will carry any make of lamp
Handsomely finished in solid brass.
Let us send you a descriptive circular and price. Write today.

IMPERIAL BRASS MFG. CO. 249 S. Jefferson St. Chicago

Automobile Lamp Manufacturers

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.
Badger Brass Mfg. Co. (Solar), Kenosha, Wis.
Commercial Acetylene Co., New York City, N. Y.
R. E. Dietz Co., New York City, N. Y.
A. H. Funke, New York City, N. Y.
Gray & Davis, Amesbury, Mass.
Manhattan Lamp Works, New York City, N. Y.
Motor Car Equipment Co., New York City, N. Y.
New York Coach & Auto Lamp Co., New York City, N. Y.
Rose Mfg. Co., Philadelphia, Pa.
Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

It is easy to avoid trouble—*simply insist upon licensed burners.*

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

Digitized by Google

Northern

"Noiseless and Dustless"

7 h. p. Runabout	$ 650
18 h. p. Side Entrance Touring Car	1,700
Limousine	2,500

Investigate our claim for QUIETNESS—you will find that the Silent Northern surpasses in this respect. It is QUIETER than the finest electric.

Investigate our claim for EASY RIDING—four full elliptic springs and scientific distribution of weight which includes placing of all mechanism under the front hood, insure a freedom from vibration such as you can have no conception of until you ride in a Silent Northern.

There are other features embracing our THREE POINT MOTOR support and encased mechanism which reduce the cost of maintenance to the minimum. Send for our complete Catalogue 14 which explains in detail.

NORTHERN MFG. CO.
DETROIT, U. S. A.

Members Association Licensed Automobile Manufacturers.

Peter Fogarty, 142 W. 38th St., New York City Agent.

Third in Elimination Race September Twenty-third

If You Build A Racin' Car

to run 60, 70 or even 80 miles an hour, you won't need any extraordinary mechanical ability. You won't produce much that is of value if you succeed.

BUT

if you become the owner of a Royal Tourist, you have a car that can go fast enough to qualify in the Vanderbilt Cup Trials, and make the round of the course any number of times without the troubles the racing cars had, and one that will stay on the road, carry its passengers with comfort and safety, do its work quietly, and without strain on the motor or running gear.

REMEMBER

The Royal proved itself faster than the racers, and any owner will tell you about its reliability and comfort.

THE ROYAL MOTOR CAR CO. .:. Cleveland, Ohio

ROYAL

AGENTS

C. A. Duerr & Co., 58th and Broadway, New York — G. J. Denham, 182 Columbus Ave., Boston
The Hi Buffee Automobile Co., 1443 Mich. Av., Chicago — G.W. Caplis, 424 So. Fifth Street, Minneapolis
Automobile Supply Co. Lim., 24 Temperance St., Toronto — Motor Shop, 317 N. Broad St., Philadelphia
Westminster Automobile Co., 4396 Olive St., St. Louis.

WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

OFFICE MANAGER

(Must be proficient in double entry book-keeping)

EXPERIENCED CORRESPONDENCE MAN

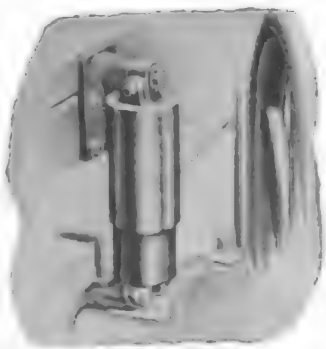
SUITABLE REPRESENTATIVE FOR FOREIGN TRIP

All departmental heads and prominent attachees must become financially identified with the business.

Address

"COMMERCIAL"
CARE OF MOTOR AGE, CHICAGO

GOODBYE



PATENT ALLOWED.
See illustrated description in Motor Age of August 3.

JOLTS JARS BUMPS AND SHOCKS
of every nature

NO Bumping Axles, Broken Springs, Disarranged Motor and Machinery, Telescoped Spines.

SAVES Tires, Springs, Motor and Transmission, Repairs, Oil, Gasoline, Perspiration.

THE KILGORE

Automobile Air Cushion
SHOCK ELIMINATOR

Permits the use of Flexible Springs on your car and a good steady speed over roads as they come. An investment paying 50% to 500% in cash and large dividends in comfort. **Good agents wanted everywhere.**

KILGORE AUTOMOBILE AIR CUSHION COMPANY
GENERAL SALES AGENTS UNITED STATES AND CANADA
S. F. HEATH, Manager — 48 Columbus Avenue, Boston, Mass.

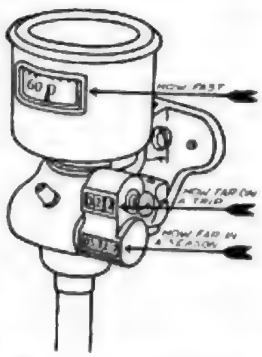
Agencies: NEW YORK, E. J. Edmond, 52 W. 43d Street.
BOSTON, Jacobs & King, 46 Columbus Avenue.
CHICAGO, Wm. R. Johnston, 1336 Michigan Blvd.
MINNEAPOLIS, Barclay Auto Co.

Digitized by Google

THE AUTO-METER "BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy



The **Speed Dial**, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The **Trip Dial** records the distance traveled on a trip or for a day.
The **Season Dial** records the total distance covered in a season.
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1801 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

MUD GUARDS

HOODS AND FORGED IRONS

"The Best Kind"

HAYES MFG. CO.

750 Bellevue Ave. Detroit, Mich.

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

STANDARD ROLLER BEARING COMPANY

MANUFACTURERS

Steel Balls, Bronze Balls and Brass Balls

USE "HIGH DUTY" BALLS FOR AUTOMOBILES

Send for Catalogue of Ball Bearings, Roller Bearings and Automobile Axles

STANDARD ROLLER BEARING COMPANY
PHILADELPHIA, PA.

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

STOP THAT NOISE!

NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

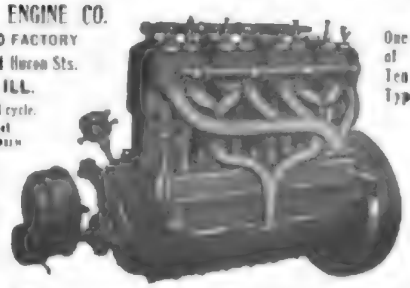
LET US HEAR FROM YOU.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, NEW YORK

MOTORS—All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury and Huron Sts.
CHICAGO, ILL.

1½-40 h. p. 2 and 4 cycle.
Designs and Specifications From us are up to date and money savers.
SPECIAL SHOP WORK
Inspection and Testing Experts
Transmissions, Reverse Gears, Marine Outfits
Telephone North 1607



One of Ten Types

Type B—3½ x 4½ Engine

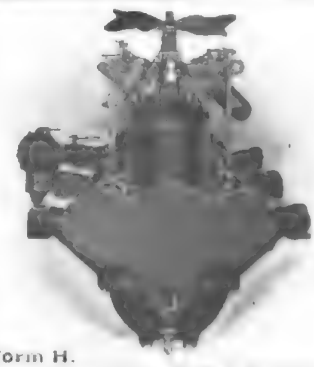
Digitized by Google

New Location

AMERICAN COIL CO., formerly of West Somerville, Mass., have removed to their new factory at FOXBORO, MASS.

Write for catalogue showing our complete line of Jump Spark Ignition Apparatus.

PACIFIC COAST BRANCH
308 McAllister St., San Francisco

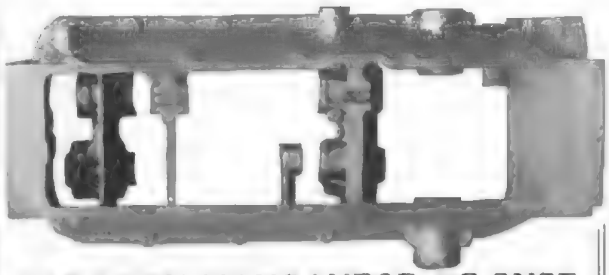


Form H.
Air-Cooled, 4-Cylinder Vertical. 3½x3½ in. 12-14 B. H. P.

MERKEL
High-Speed
Auto Engines

The Crank Case on the Merkel is made of Aluminum Alloy, 95 per cent. pure, 5 per cent. Nickel. The Crank Shaft is hammered forging, 30 carbon steel. Connecting Rods are drop steel forgings. The Cylinders are special hard, close grained casting with heads cast integral. The cooling is distributed equally to each cylinder. Merkel Engines insure the sale of your autos. Install them before cold weather comes. Write for prices today.

MERKEL MOTOR CO.
Factory, Layton Park
1097-26th Ave. Milwaukee, Wis.



PARSONS' MANGANESE BRONZE TRANSMISSION CASE CASTING
We have already furnished over 400 of these castings for the 1906 Cars of the Locomobile Company.
The Wm. Cramp & Sons Ship and Engine Building Co., *Philadelphia, Pa.*

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
A For general machine casting, pinions, car wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.
S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE,
but cannot cut the journal.
In ordering Phosphor Bronze Castings it is adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

GILSEY HOUSE

UP-TOWN

Corner 29th and Broadway
New York

Rates $1.50 up Cafe a la carte

GEORGE W. MOORE, Manager

WE ARE IGNITION SPECIALISTS

If you have any trouble with your ignition, write to us and we will tell you just what to do. We make more than 80 different articles for ignition purposes, including our

Apple Storage Battery Charger

A perfect storage battery charger. Gives a strong, steady current that never fails. No trouble to put on any car or engine; our friction driving gear makes installation easy. See that your entire car has an Apple electrical equipment.

FOR FULL INFORMATION WRITE
The Dayton Electrical Manufacturing Co. 23 Beaver Bldg. DAYTON, OHIO.

Veeder
ODOMETERS

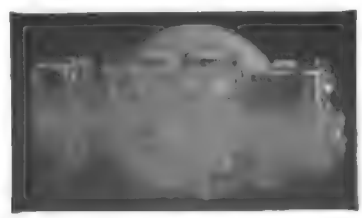
For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

Digitized by Google

THE WHITLOCK COOLER

Tested and Adopted by

90 Per Cent

of the Leading Manufacturers of

HIGH GRADE CARS FOR 1903-1904-1905

Any Design or Style of Cooler Made to Order

THE WHITLOCK COIL PIPE CO.

Hartford - Conn.

U. S. Patents Pending. Patented in England, France and Belgium

No. 66

Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The Neverout

Mirror Lens Searchlight

is a great beauty and as good as it looks.

It shows up at its best when used in connection with the new *Neverout*

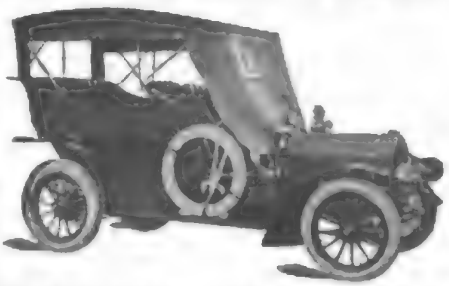
patent safety gas producer

Makes gas only as needed and produces the steadiest, whitest and most penetrating light that can be secured by any method. No danger, trouble, odor or waste.

Write for free illustrated catalogue.

ROSE MFG. CO., 912 Arch St., Philadelphia

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

TOOLS

For producing duplicate metal parts

By the use of screw machine, (plain or automatic), punching press and other methods.

Dies for blanking, forming and drawing; Drill Jigs, Milling Fixtures, Vise Jaws, Special Cutters, &c.

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class, and every effort will be made to give satisfactory service.

L. T. GAUSS

222 Mill Street, ROCHESTER, N. Y.

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.

THEY MAKE BAD ROADS GOOD.

WEED CHAIN TIRE GRIP CO.

SEND FOR BOOKLET "C" 28 MOORE ST. NEW YORK CITY.

LATEST TYPE WILLARD LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company

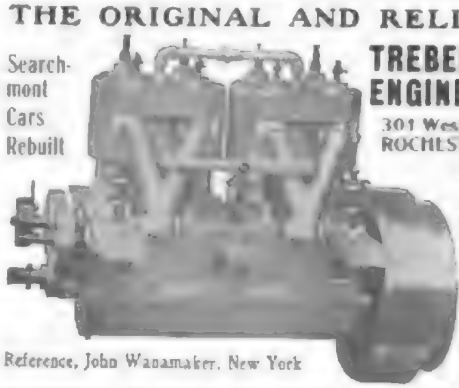
Cleveland, Ohio

THE ORIGINAL AND RELIABLE

Searchmont Cars Rebuilt

TREBERT GAS ENGINE CO.

301 West Main St. ROCHESTER, N.Y.



Up-to-date Engines, Transmission Gears and Clutches. Equal to the very latest French practice. Air and water cooled motors. Air [illegible] to 15 h.p. Water cooled Motors [illegible] to 50 h.p.

Reference, John Wanamaker, New York

Digitized by Google

WELCH

1906 LIMOUSINE CAR 1906

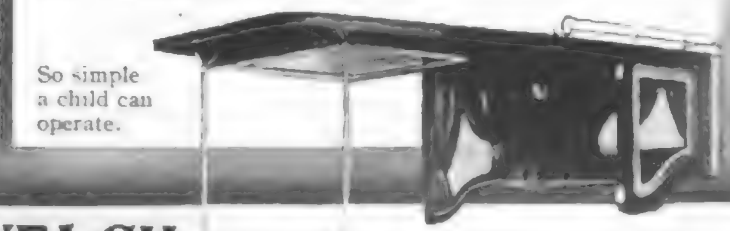
FOR

FALL AND WINTER USE

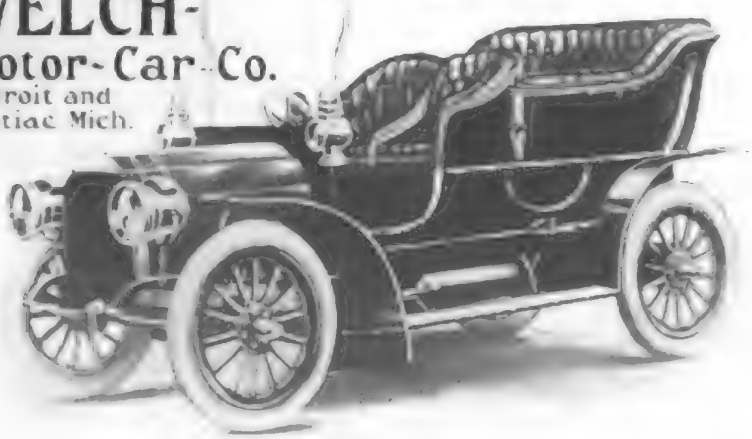
PRACTICALLY IMMEDIATE DELIVERIES

¶ Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS. ¶ Seven passenger car to suit all seasons: Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. ¶ 4 to 50 miles on direct drive.

So simple a child can operate.



WELCH-
Motor-Car-Co.
Detroit and
Pontiac Mich.

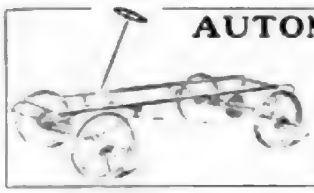


WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

READ MOTOR AGE ... $2.00 per Year

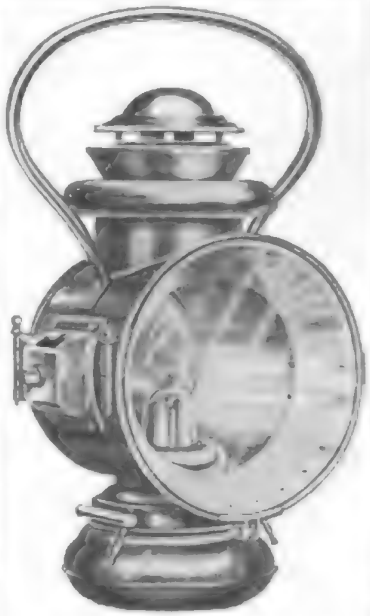


AUTOMOBILE RUNNING GEARS

WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts.

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO.



THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

C. T. HAM MFG. CO.

ROCHESTER, N. Y.

Digitized by Google

BRISCOE MFG CO.

OLDEST AND LARGEST MAKERS OF

AUTOMOBILE RADIATORS

DURING the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000 of our radiators are now cooling automobile engines.

Our standard honey comb radiators are of true cellular construction, allowing cross circulation and accounting for their high-cooling efficiency per pound of weight of cooler.

The hit of the year 1905 in radiator design has been our flat tube construction with gang fins. We make special designs for every class of car from the light runabout to the heaviest truck or omnibus.

The finish on Briscoe fenders is unexcelled. 1906 styles on metal dashes, hoods and runabout boxes are prepared and we are daily booking contracts for next season's business.

COOLERS FENDERS

HOODS TANKS

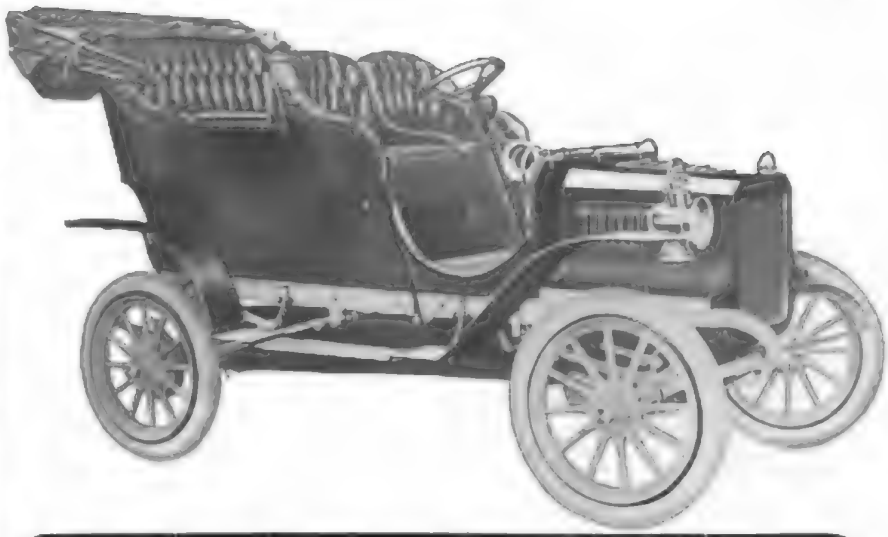
By dealing with us you get the benefit of our long experience and the protection of the many patents we own, covering our methods of construction.

The Pierce Great Arrow car which won the Glidden trophy was equipped with a Briscoe radiator. Of the twelve American water-cooled gasoline cars which received first certificates at the end of the tour six of the radiators were made in our shops, four were made by the car builders, and only two were made by other radiator manufacturers. These facts are typical of our prestige.

Our two large plants are ready to take care of our rapidly increasing business. We cannot only promise but make deliveries.

Write to our nearest office for estimates and get in line for 1906.

BRISCOE MFG CO.
DETROIT, MICH. and NEWARK, N. J.



REO for 1906

Built for What Happens

What REO Cars did in the past year demonstrated them built not for imaginary occasions, but for actual motoring—and always ready for the unexpected.

It was *actual* weather and *real* mud that made many of the 30 starters in the Chicago-St. Paul tour quit half way and finish by rail But the REO was one of the only four to come in on schedule time and on their own wheels.

Pecowaic and Paddock Hills—up which REO stock cars held a 26-mile clip on a 12 per cent grade, and captured 4 cups from cars of double their power-rating and price—are not theoretical difficulties, but *genuine* hills, that call for *genuine* power.

Old Mt. Washington is no stage scenery; but a *veritable* mountain. Up its 8 miles of ragged, dangerous, 10 to 15 per cent grade (with patches of 25 per cent), a REO car, in the great "Climb to the Clouds" cut down its class record 23 minutes, and beat its nearest competitor a minute to the mile.

Those were *practical* rocks and deep, *substantial* sand in the 1,050 miles of the famous Glidden Tour, over which two REO cars, without stoppage or repairs, carried 4 passengers each at a total cost of $3.10 per passenger.

The 1906 REOS do it all a shade better because of the same splendid construction; and a few slight improvements which put them right up to "concert pitch."

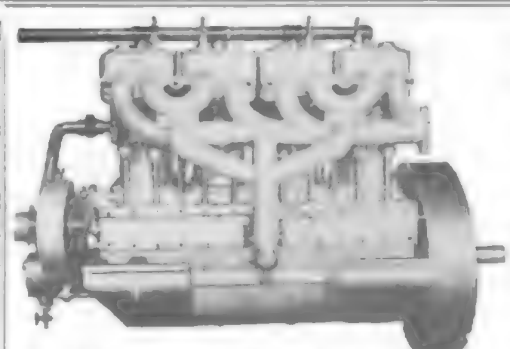
Write for the REO book that tells why.

REO 1906 Touring Car 16 h. p., 1550 pounds, 90-inch wheel base, 5 passengers, side door detachable tonneau. Speed 15 miles per hour. **$1250**

REO 1906 Runabout —convertible into a 4-passenger car. 8 h. p., 900 pounds, 2 passengers, 25 miles per hour **$650**

Or with folding seat to carry two extra passengers facing forward **$675**

Reo Motor Car Co. Sales Department, Lansing, Mich.
R. E. OLDS, *President*. R. M. OWEN, *Sales Mgr.*
Agencies throughout the United States



GASOLENE MOTORS

FROM 1 to 12 Cylinders, 12 to 140 H. P.

We build Gasolene Motors for Racing Cars, Passenger Busses, Delivery Trucks, Launches, and Grading Locomotives.

Correspondence Solicited

Milwaukee Auto Engine & Supply Co.
706-708 Winnebago Street. Milwaukee, Wis.

Digitized by Google

WITHERBEE

Storage Batteries

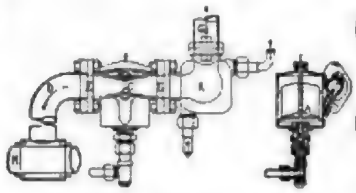
Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK



G. & A. CARBURETTORS

ARE GUARANTEED AUTOMATIC

By actual tests of the leading French makers. Float Feed Carburettor without complicated parts in many so-called "Automatic Carburettors" gives constant mixture at all speeds of motor.

FURTHER INFORMATION ON APPLICATION

A. J. MEYERS, Mgr. Am. Branch, · 1556 Broadway, New York

Colorado

At Her Best

In late summer Colorado is at her best. The green of the verdure on mountain and meadow is slowly turning to crimson and gold. Afar looms a peak whose snow-capped summit is enshrouded in autumnal haze. The air is laden with the spice of mountain pines and fir trees.

Colorado is surely the best place to go for the autumn vacation.

Very low rates via the Rock Island—Standard and Tourist sleepers and electric-lighted chair cars.

Go via Chicago, return via St. Louis if you like.

Use this coupon to learn all about it.

Rock Island System

A. B. SCHMIDT, Gen. Agent Pass. Dept.,
91 Adams St., CHICAGO.

Please send me Colorado booklet, with list of hotels and boarding houses, and tell me about Rock Island service.

Name_____

Address_____

SKINNER

COMPOUND TIRE

PUMP

300 lbs. pressure with less effort than 50 with any other

$5 ON APPROVAL AT ALL DEALERS

Skinner & Skinner

Manufacturers

4133 Indiana Ave., Chicago

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY

WARREN, OHIO, U. S. A.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort*, and one *facial* cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of its holder, and the gaskets of copper *asbo* with it. No digging!

It is nickeled inside and out. *Highly polished* and *dust-proof*. Sparks between two *adjustable* points and not between one point and the *shell*. Its points are protected.

Porcelains are *hand turned* and so perfectly glazed that soot cannot stick to them. Their corners are cut to perfection, and every particle of the idea of cheapness is left out of them. Can you think of a way to improve them regardless of cost?

Postpaid, Anywhere, $2. Booklet Free. Made by

EARL CANEDY, 2072 West Ave., CHICAGO HEIGHTS, ILL.

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.

New Haven, Conn.

If you want the agency for a $2,500 car to sell at $1,250, write today for the most attractive proposition in America.

Dept. H
Wayne Automobile Co., Detroit, Mich.

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation does not evide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.
108 WALKER STREET NEW YORK

Digitized by Google

Of course If we would spend al our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
THE LEWIS & MATTHEWS CO.
Foreign and Domestic Cars — Automobile Selling Agts. Garage and Supplies — 66, 68, 70 Stanhope St. Repairs — Cable Address: "Autohead" Used Cars
Telephone Tremont 711 — Boston, Mass., June 23, 1905

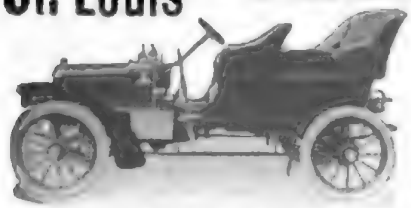
Herz & Company, 187 Elm St., New York, N. Y.:
Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric D m m. size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.
Very truly yours, THE LEWIS & MATTHEWS CO.,
Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth.
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

MOTOR CAR SPECIALTIES and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich.

St. Louis 18-22 30-34 **Actual H.P.**



"RIGS THAT RUN"—We Make Them
ST. LOUIS MOTOR CARRIAGE CO.
1211 to 1219 Vandeventer Ave. ST. LOUIS, MO.

MOTOR AGE
GETS THE NEWS
309 Michigan Ave., Chicago

REST YOUR TIRES with the **"Springfield" Auto Lift**

Showing Lift in Position to Receive Car.
You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.
E. J. DAY & CO., Pacific Coast Agents, San Francisco
THE SHAWVER CO., Springfield, O.

Bausch & Lomb MANGIN Search Light Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

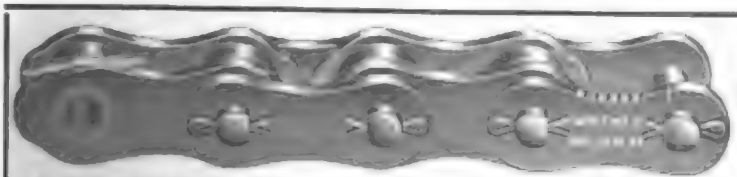
¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.
Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.
ROCHESTER, N. Y. NEW YORK, CHICAGO.
BOSTON. SAN FRANCISCO. FRANKFURT, A'm Germany.

Truffault-Hartford Suspension
Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.
HARTFORD SUSPENSION CO.
69 Vestry Street, NEW YORK CITY

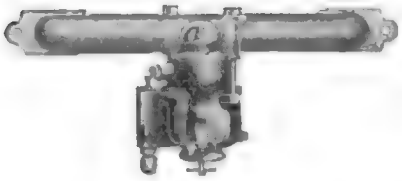
The IGNITION PROBLEM is SOLVED
in the "Lacoste" High Tension Magneto for Jump Spark Ignition
We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.
NO BATTERIES. NO COIL. NO COMMUTATOR.
Everything for Electrical Ignition.
LEON RUBAY, Sole U. S. Agents, 148 W. 38th St., N.Y.



You will notice
"WHITNEY" CHAINS
on most of the Leading Cars.
THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are now prepared to furnish our new **Model "E"** carburetor for 1905 Winton cars Models B and C. This carburetor is furnished with aluminum manifold, so that old carburetor can be removed and the new one bolted in place with very little work. Price of special Model "E" carburetor with manifold for Model B and C Wintons, $18.00.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
⅝ in. and ¾ in. gasoline outlet	$11 00
1 in. gasoline outlet	12 00
1¼ in. gasoline outlet	13 00
1½ in. gasoline outlet	14 00

Increase the power of your car by equipping it with one of the following special **Holley Carburetors.**

SPECIAL SIZE FOR

Oldsmobile Runabout	$12 00
" Tonneau Car	11 50
" Touring Runabout	11 50
Ford 10 H. P., Model C	11 50

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.
672 Beaubien St., DETROIT, MICH.

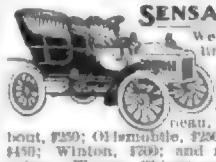
CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1291
1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1312 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago



SENSATIONAL PRICES
We are closing out all sh-rt lines together with all second hand and shop worn models to make room for 1906 agency goods now coming in—Hoffman tonneau, new, $800; Murray runabout, $250; Oldsmobile, $200; Buckboard, $200; Gale, $450; Winton, $200; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller," "Gale" and exclusive United States importers for the Benz, Mannheim, Germany. Call and see us or send for Catalogs.
MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN **AUTO SUPPLIES** FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 40
EXCELSIOR SUPPLY CO.
ESTABLISHED 1875 CHICAGO

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1528 Michigan Ave., Chicago
Telephone, South 1658

GOOD AGENTS WANTED
PREMIER
FOR ILLINOIS AND IOWA
RALPH TEMPLE
309 Michigan Avenue CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
130 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer Stevens-Duryea Orient
Pierce-Arrow Oldsmobile Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1222-26 Michigan Ave. Phone 1499 South
322-28 Fourth St. Phone 2761 Main

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 260 North Broad St.
New York, 68th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 38 South Raymond Ave.
Minneapolis, 3d Ave. South & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 5405 Centre Ave.
Rochester, 150 South Ave.
Portland, Ore., 149 5th St., N.
Cleveland, 406 Huron St.
Detroit, 265 Jefferson Ave.
Chicago, 204 East Lake St.
Buffalo, 200 Pearl St.
Boston, 59 Stanhope St.
Savannah, 309 Bull St.
St. Louis, 809 Walnut St.
Denver, 1449 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

---

The Persuasive Instrument

¶ The average person who drives a motor car has a desire to speed—to "let 'er out."

¶ But we have yet to find the man who has an insane desire to get within the clutches of the law.

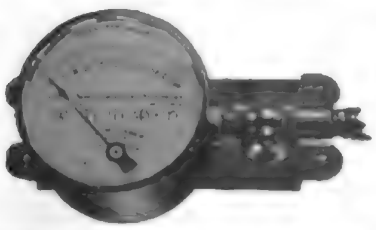
¶ *The Jones Speedometer* has that peculiar influence over the speeding motorist—if he is beyond the limit—there is that "arrow"—a constant reminder. It persuades him to go slower. Thus it accomplishes a great service.

¶ And to each user of The Jones Speedometer we present our brass Protection Tag which warns the officer of the law, not to arrest on guess work.

JONES SPEEDOMETER

Manufactured by Jos. W. Jones

121 West 32d Street, - NEW YORK



EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS

ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. — ROY F. BRITTON, Secy. and Treas.

Eclipse Pocket Ammeter

For General Battery Testing
0 to 20, 0 to 30 Amperes.

"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.

Ledge Elec tric Mfg. Co.
Springfield, Mass. U. S. A.

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

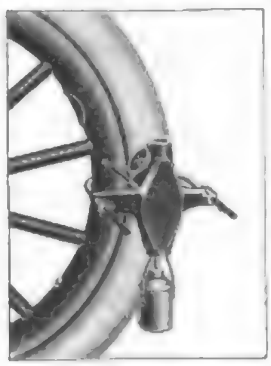
WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributer, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.



ANYBODY CAN USE IT

Blowouts, sandholes, glued cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co. Topeka, Kan., U. S. A.

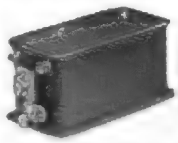
SPROCKETS

Chains and Differentials

CULLMAN WHEEL CO.

1121 RUNNING STREET, CHICAGO, ILL.

JUMP SPARK COILS



For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

Send for Catalogue K.

THE KNOBLOCK-REIDEMAN MFG. CO., South Bend, Ind.

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1203 Michigan Ave., CHICAGO, ILL. Tel. South 1201
ST. LOUIS, MO.

RUTENBER GASOLINE GAUGE

is simpler in construction than any other gauge offered. No tape floats or magnetic arrangement to get out of order. Every Gasoline Automobile or Motor Boat should have one.

Agents wanted. Special inducement for hustlers.

RUTENBER CO.,
226 East 52d Street
CHICAGO

Goodbye, Tire Troubles. Our "Good News Book" sent free. Goodyear Tire & Rubber Co., Wallace St., Akron, O.

GOODYEAR

GOOD TOPS

We make them. LONDON tops fit any car. Guaranteed. All styles, prices, samples and description of construction mailed on request.

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY

WRITE FOR SAMPLES AND PRICES

MILWAUKEE STEEL FOUNDRY CO

MILWAUKEE, WIS.

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobiles. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

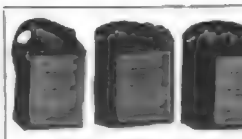
S. F. BOWSER & CO., Inc., Ft. Wayne, Ind.

LUBRICATE WITH

NON-FLUID OILS

They are much cleaner, cheaper and more generally satisfactory to use than fluid oils or greases. Will insure most efficient service from your car. Are sold by leading dealers. If you cannot obtain them write us for free sample

N. Y. & N. J. Lubricant Co. 11 Church St., New York 71 9th St., San Francisco



Voltage—Ignition Current—
20 Amp.—Hours
Prices—$6, 9, $12
Other sizes—
$3.25 to $20.00
Established 1899
Catalogues on Request

AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

CHAIN TOOL

35c

THE HUSKY KIND

SENT PREPAID FOR 40c

THE MOTOR CAR SUPPLY CO.
1427 Michigan Avenue CHICAGO, ILL.

NEW CAT READY

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN
124 W. Jackson Blvd., CHICAGO, ILL.

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

A PLEASURE TO HEAR
THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches

Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 50th St.

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 202 JACKSON BOULEVARD, CHICAGO

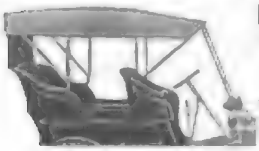
SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

372 Birnie Ave
Brightwood
SPRINGFIELD
MASS.



Write for catalogue.

Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary.

Condense Your Orders

thus obtaining lower prices, and use "Sti-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1905, price list.

The R. E. Hardy Co.
225 W. Broadway, N. Y.

No. 4, 4-in. Porcelain, $1.50 P. J. DASEY 431 Wabash Ave., Chicago No. 34, 6-in. Mica, $1.75

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.
352 S. Claremont Ave.
CHICAGO.

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2030 Axtell Street CLEVELAND, OHIO

WHEN YOU THINK SPARK PLUGS

$1.50 THINK NEVER-MISS THAT'S ALL $1.50

The up-to-the-minute Jobber and Retailer can supply you. Ask him. There is none just as good. Stand ½ in. Winton. Auto Car Metric. Fully guaranteed.

You go faster, farther and get back with a Never-Miss. Just try and see. Coils, Battery Connections, Chain Tools, &c. There are a lot of Plugs, but only one Never-Miss, and made at Lansing, Mich.

NEVER-MISS SPARK PLUG CO.

Special Design Finest Quality Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.
316 Michigan Ave. Chicago

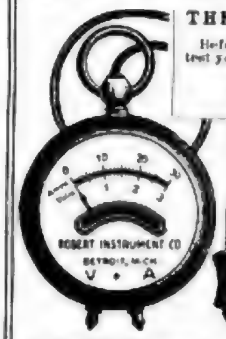
SPIRAL TUBING **RADIATORS**

HOODS ANY STYLE OR SIZE

LONG MFG. CO.
381-3-5 Wabash Ave. CHICAGO

Digitized by Google

BE SURE YOU'RE RIGHT
THEN GO AHEAD



Before starting on a trip test your batteries with the

ROBERT VOLT-AMMETER

There's no possible need for worry or anxiety after the "Robert" says your batteries are O. K. Every automobilist or engine user should use the

ROBERT VOLT-AMMETER

to ascertain the EXACT condition of their batteries. It is

INVALUABLE FOR TESTING BATTERIES

Responds accurately and instantaneously. Is convenient pocket size. Contains no intricate mechanism. Will last indefinitely.

No Inconvenience. No Disappointment. Guaranteed.

PRICE (Including Leather Case) $6.

(0-3 volts, 0-30 amperes; 0-6 volts, 0-30 amperes; 0-6 volts, 0-3 amperes.)

Write for circular and discounts.

ROBERT INSTRUMENT CO.
58 Shelby Street, : : DETROIT, MICH.

Force Feed Lubrication
Constant Sight Feed. No Liqu

McCord & Co., 1462-80 Old Colony : : Chicago
E. J. Day & Co., Pacific Coast Dist. : : tors
324-326 Golden Gate Avenue, San Fran : : o, Cal.

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX.
FAYETTEVILLE, N. Y.

"SOLDERENE"
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.
Sample 10c. Dealers Write for Price.
CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

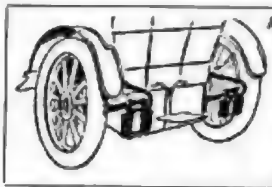
A LUBRICATOR FOR ANY CAR, ANY SYSTEM

An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed is itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

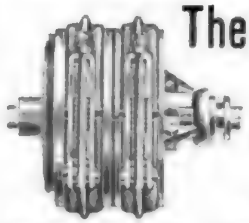
Patent Pending Manufactured by
J. T. PEDERSEN, 642-644 First Ave., N. Y.

EJ
FULL LINE Both GAS and OIL
WE GUARANTEE IT
Edmunds & Jones Mfg. Co

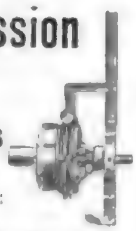


Absorbs all vibration

The Supplementary Spiral Spring
No jolts or rebounds. Acts alike under light or heavy loads
Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular today and state make and model of your car.
SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.



The Ball Improved Transmission
and REVERSE GEAR
— FOR —
Automobiles and Motor Boats
MADE ONLY OF SPUR GEARS
Patented April 9, 1901; Nov. 3, 1903; Jan. 12, 1904; Feb. 23, 1904.



NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.
Western Agents: J. H. Neustadt Co., St. Louis, Mo.

SHELBY SEAMLESS-STEEL-TUBING
BEST MADE FOR AUTOMOBILE CONSTRUCTION.
SEND SPECIFICATIONS
WE QUOTE PRICES
SHELBY STEEL TUBE CO.
PITTSBURG, PA.
BRANCH OFFICES—NEW YORK-CHICAGO.

Rajah SPARK PLUGS
The Most Reliable IGNITION ABSOLUTELY SURE
Price, Postpaid $2.00
RAJAH AUTO SUPPLY CO., 140 Washington Street New York

ONE SQUEEZE DOES THE BUSINESS

Nothing like it. Invest a quarter in a "GIBSON" Trick Purse, you'll never regret it. No remembering of pieces to deposit or remove coin. Always open for money. All leather. Guaranteed or money refunded. Agents and dealers free samples for agents and dealers
GIBSON COIN PURSE CO., Box 1002, Bellefontaine, O.

All Leading Automobile Manufacturers Use this Cushion Spring.
Ask for Samples and Prices.
National Spring & Wire Company, Albion, Mich.

Digitized by Google

For your Garage

Machine Wrenches, all kinds and sizes, milled openings.

For your Auto

Our General Service Wrench, light, long, and strong. Get our illustrated Wrench Booklet.

The Billings & Spencer Co. : HARTFORD CONN.

The HAND ON THE WHEEL

applies the brake by a touch of the finger, quick or slow, instantaneously when necessary.

A cord on the Steering Wheel operates the

WATRES SPENT GAS BRAKE

A touch on the cord applies the brake. The engine, through this device, does all the work of running the car, applies the brake, blows a powerful whistle (the only way to clear the road), and inflates the tires.

GAS ENGINE WHISTLE COMPANY

1135 Broadway, New York

Chicago Representative, WILLIAM R. JOHNSTON, [illegible] Ave

Booklet No. 1 Brake, No. 2 Motor Boat Whistle, No. 3 Stationary Engine Whistle.

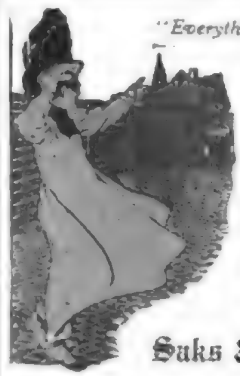
There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable. **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit **any** make of motor. State make of your motor when ordering.

HERZ & CO.

187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

"Everything for the Autoist but the Auto"



THE NEW BOOK IS IN PRESS PLEASE SEND FOR IT

We are about to issue a new Illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for fall and winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you, we would be pleased to mail a copy without charge directly it leaves the press.

Saks & Company Broadway, 32d to 34th Streets NEW YORK

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.

Formerly AUTOCAR EQUIPMENT CO.

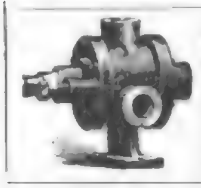
240-244 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETERSEN & DRAPER

Direct Factory Representatives



LOBEE ROTARY PUMP

now in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 240 Terrace, Buffalo, N. Y. C. L. Miller, Agt., 6 Reade St., New York, A. L. Dyke Auto Supply Co., 1746 Olive St., St. Louis, Mo.

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

MASON-KIPP MFG. CO., MADISON, WIS.

Graphite for the Motor

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.

Jersey City, N. J.

HIGH-GRADE

EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO.

Corner May and Commercial Streets, Dayton, Ohio

MISCELLANEOUS.

Advertisements under this head 2 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

WILL TRADE my 1905 Rambler tonneau for a single seated runabout and cash difference. Address Box 111, Wilmington, Ill.

FOR SALE—Auto engine, 14-16 H. P., double opposed, 5x5, practically new, with accessories, $150; condition guaranteed. Double spark coils, $7.50. Carburetors, $5. Splitdorf double timer, $5. Single spark coils, $3.75. Gear pump, $5. Solar 56 lamps, $7.50 pair. Rotary positive pump, $3 and $4. Lock Box 69, Mt. Carmel, Ill.

WANTED—Two experienced chauffeurs for 1905 Thomas, 50 H. P., and 1904 Winton. Must be able to furnish best of reference as to ability and character. Straus Bros. & Co., Box 3, Ligonier, Ind.

SITUATION WANTED—As chauffeur; experienced with high grade cars; A1 references on interview; temperate. F. E. Stowell, 264 East Erie St., Chicago, Ill.

MARION side entrance, four-cylinder car, $950. A. Zell, Park Ave. and Biddle St., Baltimore, Md.

FOR SALE—Toledo steamer, $95; will trade. 16 E. Washington St., Huntington, Ind.

FOR SALE One Olds runabout, one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars; also steam delivery wagons; all in first-class running order. Write for particulars if interested. K. A. Grout, Orange, Mass.

FOR SALE Model F Cadillac; 4 in. tires on rear and 3½ in front; in first-class shape; 2 extra tubes; 2 oil lamps; 2 7-in. mirror lens headlights, with double generator, all solars. Machine in first-class condition. Demonstration at any time. Address John A. Deignan, Genoa Junction, Wis.

FOR SALE An 8 H. P. Elridge, in fine running condition. Has double opposed engine. A bargain. For best reasonable offer. Address E. E. Buchman, No. 15 Goodrich St., Akron, Ohio.

WAVERLEY electric runabout of the type styled "Speed Wagon"; new this season and in perfect condition; batteries, thirty cells of 9 p. s.; buggy top. Apply to Wm. A. Tucker, 53 State St., Boston, Mass.

OPEN for position or contract as superintendent, foreman or traveling expert. Technical graduate, thorough mechanic. Fully conversant in designing and constructing of automobile parts and gas engines. Successful in handling men. Competent, energetic. Address Spike, 229 Austin St., Milwaukee, Wis.

Digitized by Google

FOR IMMEDIATE SALE—1903 Winton tonneau, $750; 1905 Model F Ford, tonneau, 12 H. P., $600; 1905 Rambler surrey 1, 4-inch tires, like new, $825; Model E Rambler, buggy top, $225; 2—1903 Elmores, double cylinder, 12 H. P., tonneau, $200 and $300. Drop card for detailed description. Your opportunity to buy a good car below the market value. E. S. Youse, Reading, Pa.

FOR SALE—1903 Winton; first-class condition; baskets; Neverout searchlights; complete equipment. Will sell cheap to quick purchaser. Address Automobile, 9 Everett St., Melrose, Mass.

WANTED—1905 car, about 16 horsepower; must be in good condition and standard make; for cash; or will exchange new genuine Chickering & Sons grand piano, mahogany case. W. T. Irons, 1125 O St., Lincoln, Neb.

FOR SALE—General runabout auto; fine condition; $400. Also fifty pounds calcium chloride in metal can for $2 with order. Reference, Dun. W. D. J. Everett, West Milton, Ohio.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

FOR SALE—Orient buckboard, good as new, for $200. I. Hildebrand & Son, Codorus, Pa.

FOR SALE—1905 White touring car and limousine, at a bargain; only shop worn. 1904 White touring cars have been put in best of condition. Bargains. White Automobile Co., 42 West 62d St., New York.

WANTED—To trade best grade Story & Clark piano for runabout, Stevens or Reo preferred. O. F. Holley, Madelia, Minn.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. G. M., care MOTOR AGE.

FOR SALE—High grade 8 h. p. double opposed engine, $125. 4 h. p. Marine and Auto motors, $65. Write. A. J. Houle Co., 8 East St., Holyoke, Mass.

AUTOMOBILE SCHOOL

CHICAGO SCHOOL OF MOTORING.
The original Automobile School in Chicago.
One hundred and eighty graduates the past year, to whom we refer upon request.
Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied.
CHICAGO SCHOOL OF MOTORING,
264 Michigan Ave. Phone Har. 119.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905 "Franklin" runabout in absolutely first class condition, used for demonstration only, and has had the best of care and is in every respect as good as new. R. D. Ramien, 230 Grand Ave., Milwaukee, Wis.

WANTED—Second hand motor cycle for cash. Must be a bargain. B. G. Raymond, St. Cloud, Minn.

FOR SALE—Packard 1905 Model "N" touring car, in A1 condition, equipped with over $700 worth of extras, including the following: Extension cape cart top, glass front, electric searchlights, electric headlights, tail lamp, dash lamp and exploring lamp, with two 6-volt batteries, luggage carrier on rear, Gabriel horn, Warner autometer, dash clock, seat covers, tire carrier, foot rest and robe rail in tonneau, also aluminum storage box, safety sprag, B & J lockswitch, lamp covers, etc. This car is guaranteed in absolutely first class condition in every respect and will be sold at a decided bargain considering the condition and equipment. Pardee-Ullmann Co., 1218 Michigan Ave., Chicago, Ill.

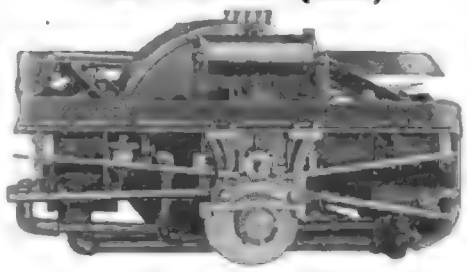
MANUFACTURERS

Desiring a practical "Auto" man with sound business judgment, experience in manufacturing lines and repairs on cars, for salesman, agent, office, etc., will correspond immediately. Address C. B., MOTOR AGE.

FOR SALE—Olds Runabout, just overhauled and in best of running order. Rear tires nearly new. New top, never used. $100 worth of extras. All for $370. Will demonstrate. C. D. Dulin, No. 42, Webster, Iowa.

EQUALIZED SPRING TRUSSED FRAME
OF THE
1906 Logan
That Car of Quality

One of Many Points of Strength



PATENT PENDING

One of Many Reasons for Comfort

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

FOR SALE OR EXCHANGE—Touring car for sale cheap, or will give you good trade for your runabout. The Starin Company, North Tonawanda, N. Y.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

FOR SALE—Packard Model L, four-cylinder, rear entrance, perfect condition, new last November, run but 1,500 miles; price $2,000. Also Packard four-cylinder, Model N, side entrance, perfect condition, new in June, run 2,000 miles; price $3,100. So perfect is the condition of both machines that they can scarcely be told from new cars. Address Theodore Strawn, Ottawa, Ill.

TIRES.

ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

FOR SALE—1904 Indian motorcycle, perfect order, $125. Lock Box No. 97, Muskegon, Mich.

WANTED—Light touring car; good order; priced right. Franklin preferred. Lock 132, Newport, Ind.

FOR SALE—24 horse 1904 Thomas touring car. Top with glass front, 2 gas. 3 oil lamps, horn and tools. Car in first class condition. Cylinders recently refitted. Tires first class, extra tubes. Reason for selling, bought 1905 Thomas. Price, $1,200. H. E. Young, Hanover, Pa.

1904 Peerless, 24-30 horsepower, in first-class condition. Must sell at once. cheap. H. N., care MOTOR AGE.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

FOR SALE—Brennen 16 h. p. motor, sliding gear transmission with running gear complete ready for tires and body; same has been used for experiment; all as good as new; will mail photo. Address A. W. Mfg. Co., Lock Box 418, Kansas City, Mo.

1903 OLDS in fine shape; price $300. Low price on 2-cylinder 4x5 auto or marine engine. Fred P. Neumeister, Rockford, Ill.

FOR SALE—7 H. P. double opposed engine in runabout; has 30x3 tires; in good condition all through; has not run 800 miles; with top and dos-a-dos seat; reason for selling, owner wants to leave country; $350 takes it. Box 65, Fond du Lac, Wis.

FOR SALE—Model L Rambler; has double opposed motors, 16 h. p.; looks well and is in good condition; tires almost new; sell cheap. One 1905 Model F four-cylinder, air-cooled Premier; new; never run; sell at a bargain. W. E. Rudy, Lima, Ohio.

PEERLESS 35 horsepower touring car, canopy top, with glass front, large rear entrance tonneau, headlights, searchlights, Prest-O-Lite tank and finest equipment throughout. Cost owner $6,000 one year ago; $2,500 for quick cash sale. Kentucky Automobile Company, Louisville, Ky.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—15 tube radiator, $10. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—A 6 h. p. engine for Crestmobile, air cooled; machine Model C; cash. Box 55, North English, Iowa.

FOR SALE—Small runabout, complete all but motor, for $125. Address Reinke, 150 W. 68th St., Chicago, Ill.

FOR SALE—Model B Cadillac detachable tonneau and deck, new Swinehart tires rear, G & J forward; perfect condition every way; $50 extras; $600. Iowa, MOTOR AGE, Chicago.

FOR SALE—1905 Northern touring car, fully equipped; write for full particulars. J. F. Kellogg, Avon, N. Y.

FOR SALE

TWO Knox observation cars, fourteen passengers; cars used three months on Paul Revere Route; are in perfect running order; company buys larger autos. Apply to

Lexington & Concord Sight-Seeing Co.
LEXINGTON, MASS.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Tom Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

NYBERG AUTOMOBILE WORKS. CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 1.

KINGSTON CARBURETORS

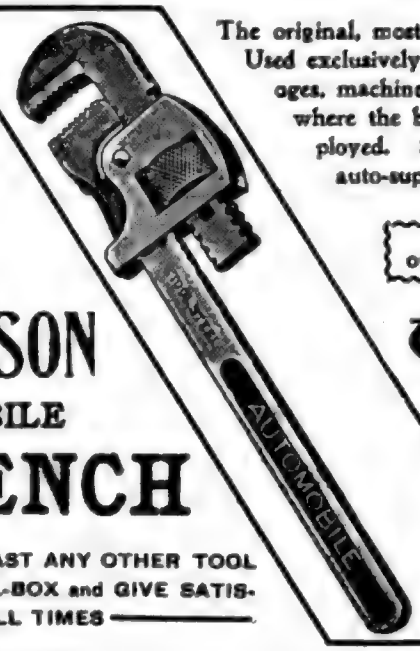
1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.
661-673 Beaubien St. DETROIT, MICH.

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston
Mass.
U. S. A.

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

Special Prices on Clincher Tires
FOR OCTOBER

One of the best tires on the market. We are on the inside.

	Casing	Inner Tube
28x2½	$13.94	$3.84
28x3	22.80	4.64
30x3	24.40	4.96
30x3½	31.69	7.04
32x3½	33.75	7.52
32x4	38.93	9.09

We can supply other sizes at proportionate prices.

Neustadt Automobile & Supply Co.
826-28-30 S. 18th St. ST. LOUIS, MO.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

LEA TIRE PUMP

Easy to use and the pressure gauge insures even inflation of all tires—makes them last longer.
Write for illustrated booklet B and proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 100 Fulton St., New York City
Philadelphia Office, 302 Lippincott Bldg. Boston Office, 15 School St

DIAMOND CHAINS

Our chains outwear all others. Replace your worn-out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 80
Adams Co. 67
Adland Motor Co. 82
American Battery Co. 84
American Coil Co. 70
American Darracq Automobile Co. 18
American Samson Leather Tire Co. 68
Apperson Bros. 77
Atwood Mfg. Co. 49
Austin Automobile Co. 73
Auto Brass & Aluminum Co. 84
Auto Directories Co. 88
Badger Brass Mfg. Co. 42
Baker Motor Vehicle Co. 63
Bausch-Lomb Optical Co. 81
Beaver Mfg. Co. 66
Billings & Spencer 86
Borbein, H. F., & Co. 78
Bowser, S. F., & Co. 84
Brennen Mfg. Co. 64
Briscoe Mfg. Co. 79
Brown, W. H. 84
Brown-Lipe Gear Co. 69
Buckeye Mfg. Co. 71
Buckeye Wheel Co. 75
Byrne-Kingston Co. 58
Cadillac Automobile Co. 53
Cadillac Co. of Illinois 82
Canedy, Earle 80
Champion, Albert, Co. 83
C., R. I. & P. R. R. Co. 80
Columbia Lubricants Co. of New York 46
Consolidated Mfg. Co. 72
Coey, C. A., & Co. 82
Continental Caoutchouc Co. 61
Continental Engine Co. 75
Continental Motor & Mfg. Co. 86
Corbin Motor Vehicle 65
Corwin Mfg. Co. 67
Cramp, Wm., & Sons Ship & Engine Building Co. 76
Cullman Wheel Co. 83
Daimler Mfg. Co. 58
Dayton Electrical Mfg. Co. 70
Dayton Motor Car Co. 57
Diamond Chain & Mfg. Co. 88
Diamond Rubber Co. 60
Dietz, R. E., Co. 69
Dixon, Joseph, Crucible Co. 86
Dyke, A. L., Auto Supply Co. 83
E. H. V. Co. 67
Eclipse Buggy Co. 84
Edmunds & Jones Mfg. Co. 85
Eldredge Electric Mfg. Co. 83
Electric Storage Battery Co. 83
Electric Vehicle Co. 67
Elmore Mfg. Co. 71
Excelsior Supply Co. 82
Fairmount Engineering Works 82
Ford Motor Co. 61
Franklin, H. H., Mfg. Co. 39
G & J Tire Co. 56
Gabriel Horn Mfg. Co. 84
Garford Mfg. Co. 43
Gas Engine Whistle Co. 86
Gauss, L. T. 77
Gibson Coin Purse Co. 85
Gilbert Mfg. Co. 80
Gilsey House 76
Githens Bros. 82
Goodrich, B. F., Co. 62
Goodyear Tire & Rubber Co. 83
Ham, C. T., Mfg. Co. 78
Hardy, R. E., Co. 84
Hartford Rubber Works 59
Hartford Suspension Co. 81
Hayes Mfg. Co. 75
Haynes Automobile Co. 54
Herz & Co. 81-86
Hofeller Brass Foundry Co. 84
Hoffheimer Soap Co. 72
Holley Bros. 82
Hussey Drop Forge & Mfg. Co. 84
Hyatt Roller Bearing Co. 88
Imperial Brass Mfg. Co. 73
Importers Co. 82
Jackson Automobile Co. 53
Jeffery, T. B., & Co. Cover
Jones Speedometer 83
Kilgore Auto Air Cushion Co. 74
Kimball, C. P., & Co. 84
Kirchberger, M., Co. 73
Knoblock-Heideman Mfg. Co. 83
Knox Automobile Co. 70
Kokomo Rubber Co. 68
Leather Tire Goods Co. 66
Lester, E. F. 85
Light Mfg. & Foundry Co. 76
Link Belt Machinery Co. 59
Lloyd Iron Roofing & Paint Co. 71
Lobee Pump Co. 86
Locomobile Co. of America 66
Logan Construction Co. 87
London Auto Supply Co. 83
Long Mfg. Co. 84
McCord & Co. 85
McDuffee Automobile Co. 82
Mason-Kipp Mfg. Co. 86
Matheson Motor Car Co. 68
Mead Cycle Co. 82
Merkel Motor Co. 76
Mexican Mfg. Co. 84
Meyers, A. J. 80
Meyers Dayton Top Co. 86
Mezgar, C. A. 51
Michelin Tire, American Branch 55
Miller, Charles E. 72
Miller Signal Co. 84
Milwaukee Auto Engine & Supply Co. 70
Milwaukee Steel Foundry Co. 83
Mitchell Motor Car Co. 38
Moline Automobile Co. 70
Morgan & Wright Cover
Motor Age 50
Motor Car Equipment Co. 65
Motor Car Specialty Co. 88
Motor Car Supply Co. 84
Mutty, L. J., Co. 84
National Motor Vehicle Co. 71
National Spring & Wire Co. 85
Neustadt Auto & Supply Co. 88
Never-Miss Spark Plug Co. 84
Newmastic Tire Co. 83
New Process Rawhide Co. 75
New York Gear Works 85
N. Y. & N. J. Lubricants Co. 84
Nordyke & Marmon 73
Northern Mfg. Co. 74
Nyberg Automobile Co. 87
Olds Motor Works 57
Packard Electric Co. 80
Packard Motor Car Co. Cover
Pardee & Ullman Co. 82
Pederson, J. T. 85
Pennsylvania Rubber Co. 63
Pierce, George N., Co. Cover
Pittsburg Reduction Co. 83
Pope Mfg. Co. 44-45
Premier Motor Mfg. Co. 70
Prest-O-Lite Co. 66
Quaker City Automobile Co. 82
Railway Appliance Co. 84
Rainier Co. 40
Rajah Auto Supply Co. 85
Remy Electric Co. 64
Reo Motor Car Co. 79
Robert Instrument Co. 85
Rose Mfg. Co. 77
Royal Motor Car Co. 74
Rubay, Leon 81
Rubber Goods Repair Co. 82
Rushmore Dynamo Works 58
Rutenber & Co. 83
St. Louis Motor Carriage Co. 81
Saks & Co. 86
Shawver & Co. 81
Shelby Steel Tube Co. 85
Skinner & Skinner 80
Smith, A. O., Co. 72
Splitdorf, C. F. 64
Springfield Metal Body Co. 84
Standard Roller Bearing Co. 75
Steel Ball Co. 68
Stevens, J., Arms & Tool Co. 41
Stitch-In-Time Vulcanizer Co. 83
Stolp Mfg. Co. 75
Streit, A., Machine Co. 76
Supplementary Spiral Spring Co. 83
Swinehart Clincher Tire Co. 72
Syracuse Aluminum & Bronze Co. 78
The Automobile Equipment Co. 81
Temple, Ralph 82
Thomas, E. R., Motor Co. 47
Thompson, Charles A., Co. 85
Timken Roller Bearing Co. 60
Trebert Gas Engine Co. 77
United States Auto Co. 82
U. S. Jack Co. 84
Veeder Mfg. Co. 76
Walworth Mfg. Co. 88
Warner Instrument Co. 69 75
Wayne Automobile Co. 80
Weber, O. F., & Co. 82
Weed Chain Tire Grip Co. 77
Welch Motor Car Co. 78
Western Tool Works 70
Wheeler, F. H. 54
White Sewing Machine Co. 55
Whitlock Coil Pipe Co. 77
Whitney Mfg. Co. 81
Willard Storage Battery Co. 77
Willis, E. J., Co. 84
Winton Motor Carriage Co. 37
Witherbee Igniter Co. 80
Wolverine Auto & Commercial Veh. Co. 62
Wray Pump Co. 69

Digitized by Google

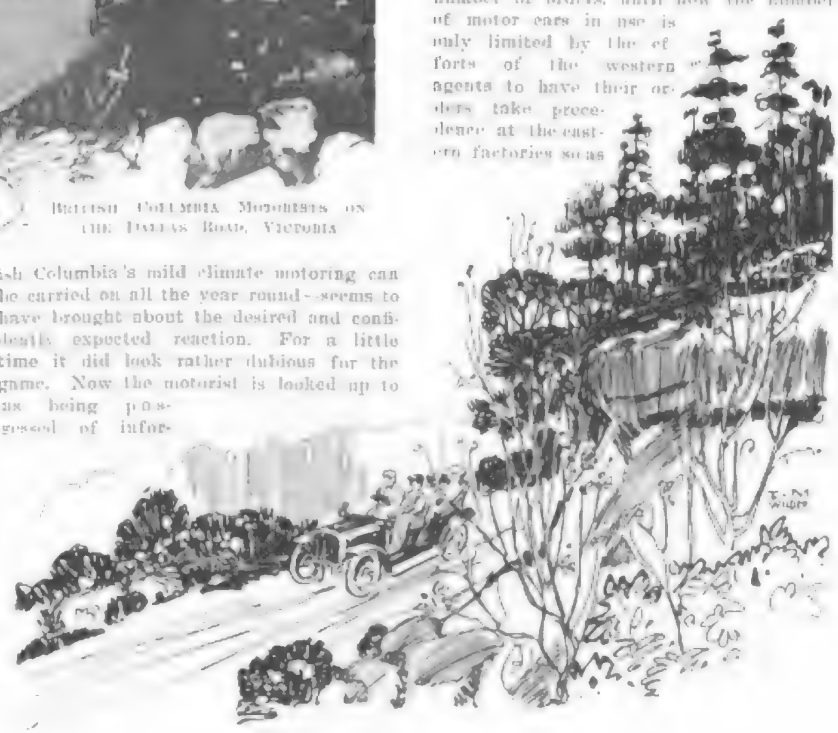
MOTOR AGE

VOL. VIII NO. 17 CHICAGO, OCTOBER 26, 1905 $2.00 Per Year

MOTORING IN BRITISH COLUMBIA

BRITISH COLUMBIA MOTORISTS ON THE DALLAS ROAD, VICTORIA

VANCOUVER, B. C., Oct. 21.—When it comes to writing the history of British Columbia 1906 can be set down as automobile year. Not because it marked the introduction of the modern motor car in this far western province, for automobiles have been a more or less familiar sight for the last 2 years in Vancouver and Victoria, as well as the other coast cities in the province. But hitherto the motor cars have been rather few in numbers and looked on by the majority as being a new means of recreation but a rather expensive toy. The steady and consistent performance of the pioneer machines in all weathers and seasons—for in British Columbia's mild climate motoring can be carried on all the year round—seems to have brought about the desired and confidently expected reaction. For a little time it did look rather dubious for the game. Now the motorist is looked up to as being possessed of information and an accomplishment out of the ordinary—in fact, the motorist occupies much the same position here now as the cyclist did in the years 1894-5-6, when the bicycling craze struck the western provinces with the added force of its complete adoption by the effete east. Early this season it became evident that the tide was about to turn as far as motoring and the automobile industry was concerned. British Columbia has some sterling sportsmen within her borders and the reports of the enthusiasm with which motoring was being adopted in the east—accounts of which occupied no inconsiderable space in the daily press—led to a host of inquiries about the automobile and its possibilities in British Columbia, which met with a ready response from eastern manufacturers when they saw the field before them. These in turn were followed by a large number of orders, until now the number of motor cars in use is only limited by the efforts of the western agents to have their orders take precedence at the eastern factories so as



In Beacon Hill Park, Victoria, B. C.

to be able to give early delivery. At first there was the usual almost exclusive demand for a light runabout machine to carry two passengers. Then as that class of machine demonstrated that the cost of operation was a very small item, the desire naturally followed for the larger touring cars. But while the use of motor cars as an up-to-date means of recreation has been enthusiastically adopted by the ultra-fashionable society, and promises in the near future to be equally popular among the middle classes, the commercial side of the motor industry has more than kept pace with the luxurious touring car.

Possibly the strongest object lesson of the serviceability and versatility of the automobile was furnished during the seasons of 1903-4 in both Vancouver and Victoria by two runabouts of the standard Oldsmobile pattern. Two leading dry goods firms—one in each city—each imported a machine of that class early in 1903. Of course, to western eyes, they were quite a curiosity at the time, being the first of their kind in the province. It was natural that their performance should be watched with interest. Fitted with delivery box attachments in the rear, these cars did yeoman service day after day in delivering dry goods. The greater part of the time each machine accomplished the work of delivering small parcels that had previously kept one and often two delivery wagons busy.

It is to the bicycle—advance agent for the modern motor car—that much of the knowledge of these roads is due. For until the advent of the bicycle, touring, with the exception of a few horseback parties, was practically an unknown quantity. Then when the bicycle was so universally adopted it was discovered that instead of being limited as to territory there was practically an unlimited number of tours available that made the two-wheeled machine more useful than a horse. At the present time, as the result of new roads being opened up and prosperous new mining and agricultural districts being developed, British Columbia has a touring area available for motorists that will compare favorably with any American state on the Pacific coast. There has been a large number of visiting touring motorists in British Columbia this summer. Many motor enthusiasts from Southern California, came north to Portland. From there some came over to attend the Lewis and Clark exposition at Vancouver and spent some time seeing the sights of the growing terminal city. A few venturesome motorists who are interested in mining properties in the Cariboo country and other localities in the interior of British Columbia shipped their cars up to Ashcroft and then made the 300-mile trip along the historic Cariboo road as far north as Barkerville. Ashcroft is located on the main line of that great national highway—the Canadian Pacific Railway. Barkerville is the chief mining center for the interior and is up near the source of the Fraser river—the father of waters in British Columbia—whose yellow flood annually brings down thousands of dollars in gold dust and nuggets, enriching bars and benches all along its banks from which rich returns are secured by western miners by washing and dredging year after year.

Another strong attraction for touring motorists from southern coast points was the Dominion exhibition—Canada's great national fair—which this year was held in New Westminster, a thriving city of 10,000 inhabitants situated 12 miles from Vancouver. The Dominion exhibition opened the last wek in September and continued for 10 days. Tourists came up by way of Seattle, Bellingham and Blaine, and crossed the Fraser river at New Westminster by means of the new million-dollar railway and traffic bridge recently opened. There are many points of interest in the vicinity of the royal city, which is one of the oldest on the mainland of British Columbia. New Westminster, it will be remembered, was almost wiped out by fire about 5 years ago, the entire business and part of the residential section having been completely destroyed. Many fire-scarred relics of that terrible conflagration yet remain as silent testimonials of the awful baptism of fire which the royal city received on that occasion.

Vancouver and New Westminster are also connected by two splendid roads. One of these runs direct between the two cities and the other goes round by way of Hastings, a small village on Burrard Inlet. The former road has always been a favorite resort for cyclists and is now equally popular among the constantly extending ranks of the automobiles. Much of the way the road is wide enough for four automobiles to drive abreast, while the hard and well kept macadam surface allows little dust. Just a few days ago the distance between Vancouver and New Westminster was covered by a Ford four-cylinder car and a 20-horsepower Oldsmobile touring car in 23 minutes. This constitutes a record over this road. The feat was accomplished by S. J. Lynch, of Seattle, who drove the Oldsmobile, and R. F. White, of Bellingham, who presided at the wheel of the Ford. As there are steep hills on the outskirts of both Vancouver and New Westminster the time i-

Popular Motor Parade Ground in Beacon Hill Park, Victoria, B. C.

Digitized by Google

considered noteworthy. The inter-urban electric tramway runs between the two cities in a more direct line than the road, yet the best time made on the tramway by a special car was 27 minutes; so the feat demonstrates the superiority of the automobile over that distance anyway. Lynch and White, who spent a week in Vancouver with a party of friends, also achieved the distinction of making a new record over the international course between Bellingham, Wash., and Vancouver, B. C. The distance is 65 miles and was covered in 4 hours and 17 minutes, which included a stop for breakfast and some minor repairs and adjustments. The time is considered by western motorists who have gone over the course as particularly good in view of the fact that just after crossing the boundary line into Canada, near the town of Blaine, there is a mountain nearly 1,000 feet high to be surmounted. The road, however, winds up it by easy stages and any car with good power has little difficulty in surmounting it. With the exception of this one hill the road between Vancouver and Bellingham is a splendid one for motoring and this course promises to be a popular one with owners of touring cars as it passes through New Westminster, Blaine, Ferndale and several other small villages en route. The customs regulations are liberal and so far both the American and Canadian officers have shown themselves very courteous and obliging to touring motorists, which adds to the popularity of the route.

PRETTY WOODLANDS FORM CHARMING BACKGROUNDS FOR THE PHOTOGRAPHER

The two leading cities in British Columbia are Victoria, the capital city, situated on the southern end of Vancouver Island, and Vancouver, the terminus of the Canadian Pacific Railway, situated on Burrard Inlet, an arm of the sea running into the mainland. Although Vancouver is without a doubt the more progressive city of the two and now has almost double the population of Victoria, still the capital city has more than double the number of automobiles within her borders than all the rest of the province combined. This may seem strange to an outsider, but it is mainly due to the fact that Victoria has a large proportion of well-to-do English residents among her population. There are also many retired army and naval officials as well as successful miners and pioneer residents who have made their pile in gold mines or real estate speculation in early days.

Esquimalt, situated 3 miles from Victoria, and until recently the naval base of the British North Pacific squadron, has always been the temporary residence of a number of English naval officers who were accustomed to the use of the motor cars in dear hold Hengland, and it was but natural that they should import cars or runabouts for their use while stationed at Esquimalt for several years. The constant presence of a large garrison—the Fifth Regiment Canadian Artillery—to man the extensive fortifications at Esquimalt, naturally led some of the officers to wish for a quick means of transport besides the tram cars, between the forts and Victoria. Until this spring there were few well-to-do people in Victoria who did not own their carriage and pair or at least a single horse and phaeton. But now that is all being changed and the motor car is responsible for the change. The horse is being shoved into the background as a fashionable means of recreation and travel and the automobile is IT with both letters in capitals. The number of new cars that have been purchased this season in this far western city would compare very favorably with the most enthusiastic motoring city of the same size in the east. From two large touring cars and a half dozen runabouts with which the ultra-fashionable set astonished its friends last season, Victoria's motor brigade has grown to half a hundred. And there would be more but for the fact the local agents cannot guarantee delivery soon enough. The increase in the number of motor cars this season in Victoria has been one of the sensations of the year and the daily newspapers of the capital city as well as other coast cities have commented favorably on the fact as an evidence of the progress of the west.

Not alone is Victoria at the head of the list of western cities as far as the number of automobiles is concerned, but the capital city also has the distinction of having the first automobile club organized in western Canada. When the automobile fever struck Victoria early in the spring steps were at once taken by a number of enthusiasts to organize a club. The objects of the club were announced as the promotion of good fellowship among the motorists, the inauguration of a campaign for better roads and the safeguarding of the legal interests of automobile owners and drivers. The club is known as the Victoria Automobile Club. It was decided to commence a campaign for the improvement of certain portions of many of the principal thoroughfares in the vicinity of Victoria. A number of the roads leading to Shawnigan, Goldstream and Nanaimo and other popular objective points for motor touring, needed ballasting badly in certain places. While the surface of the majority of the road was all that could be desired, there were a number of spots where loose sand gravel prevailed. Owing to a peculiarity of the topography of the interior of Vancouver Island a number of sandy hills prevail. These sandy hills proved serious drawbacks to motoring, for while the grade of the hills was not very steep, the loose sand rendered some of the hills almost impassable for all but the more powerful cars.

Although the recreation and touring possibilities of the automobile are of the most roseate hue in Victoria, the trade situation in the capital city is also equally promising. The brisk demand for motor cars has naturally led to many agencies being established. As yet few of the local agents have had a chance to carry any cars in stock for more than a few days at the most. Inadequate storage facilities at present also hamper a number of the leading dealers, but arrangements for several large salesrooms and garages are being made.

The present season started out in a promising manner in Vancouver as far as the automobile was concerned, but just at

Digitized by Google

After experimenting for years with various forms of observation and vestibule cars calculated to give passengers a better opportunity to enjoy the scenic beauties of the Cascade, Selkirk and Rocky Mountain ranges, the Canadian Pacific Railway has reverted to the use of automobiles to solve the problem. An automobile passenger service was operated during the summer months by the C. P. R. between Glacier and Field. These two stations, which are situated on the main line of the C. P. R., are 75 miles apart. Between them lie some of the grandest and most impressive mountain scenery to be found anywhere in the American continent. The views are so beautiful and varied that much of the beauty is lost owing to the speed at which the Imperial Limited and other fast passenger trains travel in their 4-day journey from tidewater to tidewater. F. C. Collins, the traveling passenger agent of the C. P. R., made the announcement regarding the new automobile passenger service. He said:

"The very latest thing in railroading has just been inaugurated by our company. We have no fewer than twenty-five automobiles to operate between Glacier and Field, which takes in all the famous mountain resorts along the line of the Canadian Pacific Railway. Each motor car is capable of carrying sixteen passengers, including the driver. The wheel base is considerably longer than that of an ordinary automobile and the tonneau is double the size of the ordinary touring car and is somewhat differently arranged as regards the seating capacity. The wheels, of course, are of steel and flanged. The driver has nothing to do but control the motor as there will be no steering necessary. The front of the machines is protected by a large glass shield. This will protect the passengers from some of the strong gusts that occasionally sweep through the valleys of the mountain ranges. But there is no other canopy or enclosure to the cars so that the passengers are thus able to get the full benefit of all the scenic grandeur. Many rich tourists visit the various mountain resorts on the Canadian Pacific Railway each year. For several years past the number of requests to be allowed to ride over this portion of the mountain section on the top of a freight train or the pilot of a locomotive has amounted to a constantly increasing number, so to accommodate that class of tourist the company decided to establish the automobile passenger service. I might also add that Sir William Van Horne, the president of the C. P. R., was the first to suggest the inauguration of this style of travel. Sir William got the idea from Charles J. Glidden, the world-touring motorist, who made part of his journey across the American continent in his Napier car over the tracks of the Canadian Pacific Railway. Mr. Glidden had a set of special steel wheels made for his car, and prior to starting out on his railway journey demonstrated to a committee of railway men at Minneapolis that he could cover 1 mile a minute in his car. In coming across the Canadian Pacific Railway Mr. Glidden carried a conductor and ran on a regular train schedule. Sir William was very much interested in the experiment and by his orders Mr. Glidden was several times sent out just ahead of the Imperial Limited and other fast passenger trains whose schedule called for an average of 33 miles an hour, including all stops. Mr. Glidden did not know that his Napier car was being submitted to such a test at the time, but he had no difficulty in maintaining his schedule. Afterwards Sir William met Mr. Glidden at Vancouver and told him of it. The C. P. R. president also inquired into many details and the cost of that method of travel. Sir William was taken for a short trip up the line from Vancouver by Mr. Glidden in his world-girdling car before it was placed in bond. Mr. Glidden assured Sir William that had it been necessary he would have had no difficulty in maintaining an average speed of 40 miles an hour during his trip over the rails—and that on about half the consumption of gasoline usually required on the average highway. So the establishment of the automobile passenger service this summer is the direct result of Mr. Glidden's inaugural railway automobile trip."

No one doubts but what the automobile is a success in British Columbia, touring as well as commercial. The pioneer commercial machines have certainly been a success and it is but the matter of a short time until the motor car will be a powerful competitor with the horse—even in a country where equines range the hills in thousands and a horse can be bought far more cheaply than a saddle and bridle.

A Natural Garage, Located in Stanley Park, Vancouver, B. C.

Digitized by Google

J. BULL'S DULL SPELL

England Experiencing Lull Before Show Time—Nothing Doing But Unimportant Stunts

London, Oct. 14—We are experiencing the lull that invariably precedes our show storm. With factory managers deep in travail over their show productions, depot managers quite unable to give any official information regarding next season's models, and nothing moving in the sporting line, the side shows of automobiiists are having an inning. These side shows at the moment are the various associations that have sprung into existence around the motor car and its users, and such odd advertisement-providing devices as drives to Constantinople; drives of 2,400 miles without stopping the engine, and 24 hours' trips from Brighton to Edinburgh without changing from the top gear.

The Constantinople tourist is R. L. Jefferson, who was once well known by his travels with a bicycle over the same route, to Moscow and to Khiva. He is an official of the Rover Cycle Co., of Coventry, which has begun to make motor cars. It is stated to be a private tour by Mr. Jefferson, but some people have an indefinite suspicion that he will return in time to have his Rover car exhibited in all the honorable array of mud at the Olympia show.

The 2,400 miles drive was a disastrous attempt on the part of the manager of Mors, Ltd., the English branch of the big French firm, to deprive the Clement-Talbot car of the Dewar cup which was given a year or so ago by the whisky knight—Sir Thomas Dewar—for a phenomenal long stop-over drive by D. M. Weigel, late manager of the earl of Shrewsbury's motor car company. It was the second attempt of the Mors people and ended when about half of the proposed 2,400 miles had been covered by the driver falling asleep and driving into a ditch, smashing up the car, himself and his passengers, though not seriously. The top-gear performer was Cecil Edge and the performance was intended to illustrate the peerless flexibility of the six-cylinder Napier engine. The car was started from Brighton on its top speed gear, rated to do about 45 miles per hour at maximum, and the gear lever was not touched until Edinburgh—about 460 miles—had been reached in about 23¼ hours' driving, spread over 2 days. As there are plenty of steep gradients on the route, ranging from 1 in 11 to 1 in 17, the flexibility of the engine was amply demonstrated, but since the horse power of the engine is probably nearer 50 than 30 and the total load well under two tons, the flexibility is not quite so convincing as 15-horsepower drivers would like. The fastest speed registered was 46.5 miles per hour and the slowest—just to illustrate the range—1.33 miles per hour.

The efforts of the minor associations to justify their existence has led to the adoption of special lines of effort. One takes the general advancement of the British motor car industry under its care, another seeks to protect motor car drivers from police traps, and so on. The former is being sadly knocked about for having, it is alleged, accepted the responsibility of publishing the somewhat muddled statistics of George Prade's to the great glorification of the British motor car maker and his market. The figure, or rather Prade's conjectures reduced to figures, are shown to be all wrong, but nobody seems to be worried, not even the man who translated the article and sent it to the English press. The association that is endeavoring to defeat the police seems a jolly body. It took a lot of pressmen out last Sunday and they were lunched and refreshed ad lib. during the course of a long drive into the heart of Surrey, taken in order to show how the police trap is circumvented by means of a system of cyclist patrols in the neighborhood of police-trapped areas. But it is perhaps a coincidence that during the next few days the police bags were heavier than ever. It would require an army corps of cyclists and an expenditure of £100 a day to patrol the roads for 50 miles around London. Consequently the police are likely to have the best of the game. The deep and increasing discontent which the expensive measures of the police have created has found voice in a decided proposal to create roads for motorists alone. And the project has so far progressed that a distinguished engineer like Sir Douglas Fox has actually taken the pains to map out a scheme of this nature and has had the Daily Mail give it editorial blessing.

ECONOMY TEST OFFICIALS

New York, Oct. 24—At its meeting last night the contest committee in charge of the proposed 6 days' economy test of the New York Motor Club, which will start next Monday, chose the following officials: Ezra T. Fitch, referee; H. H. Everett, superintendent of observers; M. C. Reeves, superintendent of garages; W. B. Coleman, quartermaster in charge of fuel supplies; and Ernest Ferguson, chief inspector. A. L. McMurtry, C. H. Hyde, E. F. Fitch, F. J. Griffin and F. Ed Spooner will furnish and pilot the official cars, which are to accompany the run. It will be determined later whether it will be practicable to lay out different routes going and coming. The entries close on Friday. Those so far received are: Two Reos, two Compounds, a Frayer-Miller, a Marmon and four Franklins. It is reported, however, that the Franklin entries have been withdrawn. It is stated that the entry of four Maxwells has been promised.

GLIDDEN SAILS FOR EUROPE

New York, Oct. 24—Charles J. Glidden sailed today on the Kron Prinz Wilhelm for Marseilles, whence he will take ship to India to resume his around-the-world tour. He has yet some 8,000 miles to cover in India, Ceylon, Siam, China and Japan. By way of farewell Mr. Glidden interested a large gathering at the A. C. A. last night with an illustrated lecture of his experiences in Australia, New Zealand, Java and the islands of the southern Pacific and Indian oceans.

LANCIA AS A JOLLIER

Italian Driver Promises to Tell His King of Warm Reception Given Him in America

New York, Oct. 21—Both as a grubfest and gabfest the banquet promoted by Senator Morgan at the Press Club last Wednesday night in honor of the foreign racing men was a howling success, though Hemery, the Hamlet of the play, and his racing partner, Wagner, were conspicuous by their absence, having been attacked at the last moment with stage fright at the idea of meeting a brigade of American after-dinner speakers. Lancia was there and was promptly installed by the speakers as the lion of the feast, an honor perhaps not altogether undeserved under any circumstances. Nazarri, of the Italian team, and Sisz, of the French quintet, completed the roll of foreigners in attendance.

A congenial bunch was in attendance, not hampered by the awe of society surroundings or an overflow of millionaires. Is there any wonder that everything went off with a hurrah?

The foreigners entered heartily into the goodfellowship and informality of the occasion. Lancia shook his fat sides with merriment. Dignified Nazarri relaxed into a continuous wreath of smiles and Sisz was convulsed with laughter at the spicy Parisian bon mots of Batch, the boulevardier. All the speakers gave the Europeans a high old send-off and the best line of jolly in their repertoire. The Frenchman and Italians were certainly made to realize that they were the candy.

Sam Miles, who was toastmaster, kept the pace stiff and gave the cue to the speakers that enabled them to interest themselves in oratory.

Lancia was greeted with uproarious applause when he rose to make his little speech, which was translated by Mr. Unlander.

"I can rightly call you my American friends," said he, "and also the thousands who lined the course in the race. No driver could expect the warm reception that was extended to me, and I can assure you that when I return to Italy it will be my great pleasure to tell the Italian people and our beloved king of the warm reception awarded to the sons of Italy in the United States. The Italian king, as you know, is an enthusiastic automobilist, and, believe me, he is a driver of great ability. It is regrettable that an accident happened to my car, as the time made shows that if nothing had happened a world's record would have been made. I do not believe for a moment but that the accident was one which might happen in any race, and I absolve Mr. Christie from any intention of doing me or my machine any wrong."

To each guest was given a gold watch fob with the impress of the Vanderbilt cup on one side and the seal of the New York Press Club on the other. The menu cards showed the cup filled with champagne bottles, with legs climbing a ladder to its brim. The various courses were named after the drivers in the race.

Digitized by Google

Lancia and Nazarri are to sail tomorrow. They are to leave their Vanderbilt cars behind them. They say that they hope to come back for the Florida meet; but, to be candid, the chance is small as they will be busy trying out the Fiat cars. It is probable, though, that Chevrolet and Cedrino will be pilots of the Fiats at Ormond. It is not unlikely that some rich Americans with racing aspirations may buy the cars used by Lancia and Nazarri for use in the southern circuit. It is even rumored that W. K. Vanderbilt, Jr., has bought them for $28,000.

On La Savoie, which sailed last Thursday, were Hemety, Wagner, Sisz and Duray, of the French team; Jenatzy, of the German team, and M. Faroux, special commissioner of L'Auto; and Baron Ardien de Turckheim, of the Automobile Club of France. They were given a warm send-off.

SMALL ROAD RACE IN CUBA

Havana, Oct. 23—Enthused by the Vanderbilt cup race, an attempt was made yesterday to run a 100-mile race over Cuban roads. Only three cars faced the starter, though, and none of these finished. So unsatisfactory was the contest that another will be held next Sunday. The weather conditions were perfect. Nevertheless, only three machines lined up at Arroyoarena—E. R. Brown's Queen, Ralph Doniphan's Darracq, driven by Charles Harrah, and Frank R. Ruze's De Dion-Bouton, driven by Joseph T. Miller. Frank Bowman had entered his Darracq, but the machine was wrecked by a trolley car, which struck it violently from behind, while it was going very slowly on account of a puncture. The first trouble encountered by the racers was in the town of Guanajay, where policemen with drawn revolvers waved red flags as a signal to stop. One driver, believing there was some danger ahead on the road, came to a full stop and was then informed that he must travel slowly through the town. The next driver wrenched the flag from the policeman's hand, not slackening his speed. The first accident was when Brown, who handled his own car, in making a turn on the road, threw out his mechanic, Joaquin Lopez, who sat by his side. Lopez was not much hurt, and yelled to him to proceed. Brown did so, but soon broke down. Harrah, who was driving Doniphan, crashed into the side of a culvert, exploding his tires and breaking several parts of the machine, besides hurling two men into a ditch. They, however, escaped without injury. Ruze, who started last, passed the others on the road near Artemisa, when his axle broke.

CHICAGO SHOW APPLICATIONS

New York, Oct. 24—There have already been 180 applications for the 131 spaces on the main floor of the Coliseum at the N. A. A. M. show. S. A. Miles, general manager, has an idea that a gallery can be added, which will give 10,000 square feet of additional space. He will leave for Chicago tomorrow to put it through if it be found practicable.

Over 45,000 square feet of space has already been applied for for the exhibition of the Automobile Club of America, to be held in the new Sixty-ninth Regiment armory next January.

QUIZ ON RACING GAME

N. A. A. M. Seeks to Enforce Sanction Rule on Road Contests — Asks Opinions

New York, Oct. 24—Samuel A. Miles, general manager of the National Association of Automobile Manufacturers, is sounding the members of the association for their views on racing, with the idea of bringing these views before the executive committee next Tuesday. That the committee favors drawing the line and debarring the N. A. A. people from competing in unsanctioned events is shown by the following resolution which it has adopted:

"Resolved, That this association is opposed to the holding of contests which have not been approved by its executive committee and that it shall not be permissible for any member to take part in any such unapproved contest under penalty of being debarred from participation in such events as may be held with the approval of or under the auspices of this association."

In his letter the general manager says:

"The replies on the resolution by members indicate that the measure is heartily approved. We are now desirous of obtaining your opinion concerning the advisability of a similar but more stringent resolution, to go into effect in 1906, and should be glad of replies to these questions:

"Are you in favor of the adoption of a resolution requiring members to refrain from participating in road contests, such as competitive tours, endurance tests, economy tests, etc., which have not been approved by this association?

"Do you favor a penalty for the infraction of such a rule, if passed; for example, refusal to permit transgressors to take part in such events as are approved by the association?

"If such a resolution is passed may we rely upon you to abide by its provisions?"

Interviewed by a MOTOR AGE man today as to the attitude of the National Association of Automobile Manufacturers toward the entry of cars in tests of various kinds promoted by clubs and others, Manager Miles said:

"The resolution adopted by the contest committee at its last meeting tells its own story. It was not aimed at the New York Motor Club or any other club in particular, but was a mere expression of the committee's views on the general subject of participation in independently promoted tests. The N. A. A. M. contest committee, which took the action in question, is made up of Messrs. Waldon, Davis, Clifton, Kittridge and Pope.

"It is likely, however, that the members of the association will express themselves much more forcibly on this subject next year and take radical action to limit the participation of members in these contests.

"'We get applications every day,' said a member to me, 'from people asking us to go into these contests, whose promoters look to the trade to bear the expenses thereof. It has now come to a point where we must take some action to protect ourselves, for you can readily understand how difficult it is to discriminate even if we desired to enter tests other than those directly sanctioned by our association.'

"Any statement that I influenced the committee in any way in its action is nonsense. The resolution was adopted by the committee at its own initiative and solely for the protection of the trade."

Of the entrants to the New York Motor Club's economy test the Reo, Compound, Frayer-Miller, Maxwell and Marmon cars are non-members of the N. A. A. M. Mr. Miller says that Mr. Franklin writes him that the entry of the Franklins has been withdrawn.

HERALD NOW FAVORS RACING

New York, Oct. 24—Following the success of the Vanderbilt race, the New York Herald has made what looks like a right-about change in its attitude toward international road racing. Previous to the race, evidently under orders from Paris or a desire to please the owner of the paper, the race was persistently referred to as "the last international race." Mr. Bennett had evidently swallowed bob, hook and sinker the Marquis de Dion's advocacy of the abandoment of racing for touring contests, and was reported to have consented to let the Bennett cup be put up by the French club as the prize in such a test. He was quick, though, to read the handwriting on the wall in the success of the Vanderbilt race, the American demand for its continuance, and the evident inclination of the foreign competitors to take part in future races in this country. For 4 days the Herald has been filled with interviews, largely pro and very little con, on the advisability of future contests. It introduces a whole string of interviews with prominent tradesmen, clubmen and importers, in favor of racing by a very large majority. Then the Herald makes a clean switch and says the Vanderbilt cup is likely to be returned to its donor by the Automobile Club of France for competition in the United States next year.

It is to laugh at all this argument. Everyone knows that there will be an international road race in the United States next year and probably for several years to come, and more than likely the Bennett race will be run again in Europe, and in all probability in France itself. France cannot afford to stay out of these contests.

THOMAS CUP CONDITIONS

New York, Oct. 23—Only two conditions are made by E. R. Thomas, of Buffalo, who has offered a cup to be put up in competition for American cars, in the selection of an American team for the Vanderbilt cup race next year. The first is that it shall not bear his name and the second that the committee which has actual charge of the race for the cup shall not have as a member anyone who is interested either directly or indirectly in the automobile business. To formulate the rules to govern the contest, Mr. Thomas asks that every recognized American manufacturer be represented at a meeting to be held within a short time and at which the details can be discussed.

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office
American Publication
Bureau 58 Manor
Park Road Hackney,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the
Trade Press Co · N H Van Sicklen
Manager · Telephone Harrison 4410

Member National Association of Automobile Manufacturers Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year · Foreign subscription four dollars
The Western News Co · of Chicago and its branches
supply newsdealers · Entered at the
Chicago postoffice as second class matter

GET NEAR TO NATURE AND REALLY LIVE

BEFORE another decade passes it will have been proved that the motor car is the salvation of the rural districts—not because it will have been responsible for the bettering of the highways throughout the country, but because it will have been the means of taking rural life away from the isolation that now surrounds it.

For the past couple of decades there has been an alarming tendency on the part of the country youth and the country maiden to drift toward more settled portions of the country and to surround themselves with such luxuries as city life naturally brings. No man or woman can be blamed for disliking isolation. It has been the cause of more insanity than any other one thing.

Heretofore farm life has been a drudge to both sexes. The advent, however, of rural free delivery and trolley cars has done much to relieve rural residents of a considerable portion of their monotonous existence. But the trolley car with its expensive equipment and its necessarily expensive right of way cannot reach all sections of the world; it must be assisted in its endeavor to prevent an exodus from the country.

Therefore, it devolves upon the motor car to finish the work the trolley started. When the day has come when motor cars, for pleasure and for business, shall pass over all the highways and byways of the country, the tendency to flock to cities will have passed away, to a large extent, and the man who today is living in crowded tenements will see his way clear to live as nature provided he should live, to see comforts and blessings which now are largely found in cities alone.

The automobile cannot perform its share of this great duty until the people of the country and the people of the cities, together with their representatives in various town, city, county and state governing bodies shall have started in the furtherance of this great plan by providing highways upon which it is possible for road locomotives to travel. It has been shown time and time again that every section of the country which is provided with good highways is in a prosperous condition; it has also been shown that where poor roads exist poor farms and poor people also exist.

There is little use today in attempting to educate the masses in the matter of the benefits which good roads will produce. The work must go through the legislatures. When the state and the nation shall have been convinced that good roads will be the life and the salvation of the rural districts and the enemy of race suicide good roads will come and until good roads come the other matters referred to will be where they are today. Good roads, coupled with the use of motor vehicles throughout the country, will not only make marketing and purchasing more accessible to the country resident but will also bring the country schools nearer the people, giving the younger minds that fertilization they do not receive now.

It will remain for motor cars to be the blood and good roads the arteries supplying life to the towns and country. It may take a long time, first to accustom the farmer to the automobile and then to convince him he needs the combination of automobile and good roads, not only for the pleasure of himself and his family, but as a means of fattening his pocketbook and saving him an immense amount of labor as well.

There is an immense amount of work for automobilists to perform regardless of the selfish side of the matter. It is their duty as citizens to promulgate such doctrines as have been herein laid out. They are in better positions to do this missionary work than others. The automobilist is now seeking the country on tours and must necessarily meet hundreds of ruralites in the course of a season. The farmer and the merchant in the farming district towns will be found susceptible to argument, particularly when shown that his pocketbook will be benefited to say nothing of himself and his family.

This great work should be the work of those associations and clubs which have been organized by automobilists and which must, in order to survive, have some other object in view than the mere promoting of races and club runs. There is a citizenship duty which must be considered; without considering this duty the entire organization must fail. The formation of automobile clubs was somewhat like the formation of bicycle clubs in the early days, but the bicycle clubs eventually drifted along and into larger organizations, which commanded the respect of the entire world in their endeavors to secure benefits not only to wheelmen but to the community at large.

So far the attempts of the automobile organizations to secure such benefits have been minute, notwithstanding the fact that ample groundwork has been laid and ample opportunity offered to produce results which would be of everlasting benefit, not only to the automobilist but to the entire community. When the minute automobile organizations and automobilists arrive at the point of doing what they do do for their own selfish selves, just then will their mission fail. No selfish person ever accomplished anything in the long run; he has been a flat failure in the end. Such will be the end of automobile organizations if selfishness is a part of their makeup.

It might be added that the manufacturers of automobiles are pursuing a penny-wise, pound-foolish policy when they do not give some heed to the handwriting on the wall and endeavor to lay a groundwork for future business, which to them is life. The automobilist, the manufacturer and the driver must not wait for the farmer or for the politician or for anybody else; they must go out for the game themselves, win their own spurs and merit the victory.

AN UNSETTLED MECHANICAL QUESTION

IT IS clearly evident from the results of many of the big road events of the season of 1905 that the question of superiority of either double side chain or shaft drive for final transmission on racing cars is as far from settlement as it has been since either came into prominence, and it is further evident that the question will remain open for some time.

The first two cars to finish in the Long Island contest were fitted with shafts for final drive and the next two with double side chains. On the other hand but five of the nineteen cars entered were so fitted, the others, save one, being equipped with double side chains. That the cars fitted with either form had not the least trouble from this source would tend to further prolong the argument as to the superiority of one over the other.

Heretofore it has been generally claimed that the double chain drive was superior to the shaft for racing cars of high power, but the work of the Darracq, the Renault, the Panhard and the White this season and the Packard Grey Wolf and others last season has proved that, for final drive, the shaft system at least holds its own so far as standing up is concerned and also so far as speed is concerned when the matter of power is taken into consideration.

There is an increasing tendency among makers on this side of the water to use shaft drive, not that it is cheaper to construct, but that, owing to the poor and dirty roads and uncertain weather conditions, it can be kept free from mud and grit. Doubtless, too, this form permits the making of a more quiet running car, although the little hum from the gears is present, which is offset by the slight dry rattling of the chains.

The makers of the chain-driven cars naturally claim smaller loss of power in transmission to the road wheels, and on the other hand the makers marketing shaft-driven machines are quite as well satisfied that no perceptible loss, if any, can be determined.

It will take another year and then still another to determine to the satisfaction of makers and designers which form of final transmission is better. In the meantime it will be up to the salesman's talk to convince the new customer and the old one will have been convinced by his own experience. The contest will be finally settled by long tours and road events.

Digitized by Google

Jump Sparks

Banqueting the foreigner drivers by Senator Morgan might have been by way of a little salve for some of them.

What becomes of all the automobiles is as much a problem now as was that of what became of all the old bicycles in years gone by.

Abroad there are several big events to take place before the year ends, but at home the only battle will be between the rival makers and rival agents.

If the National Association of Automobile Manufacturers taboos all sorts of automobile contests except those sanctioned by itself, the American Automobile Association and the Vanderbilt cup commission may as well go out of business.

It must have been disagreeable to have that man Moore—against whom an injunction was secured in re the Selden patents—die and then bob into life again. The question is, on whom is the joke, if it was a joke?

At least one American automobile maker and one American tire maker had occasion to do and would have been justified in doing a little crowing over their respective successes in the Vanderbilt cup race, but modestly refrained from doing so, which illustrates that Americans are not as boastful as some people had imagined.

T W

Foreign drivers who competed in Vanderbilt cup race sail for home; Senator Morgan gives banquet at which Lancia and Nazarri are lions.

C. J. Glidden sails for Europe to resume tour of world; sub committee of Glidden tour of 1906 confers with donor of cup regarding ing event.

National Association of Automobile Manufacturers sends out quiz to find how its members stand on sanctioning road contests.

Webb Jay leaves Buffalo and returns to his Cleveland home; he says he may take a whirl at straight away racing.

Automobile Club of Germany reported to be working on international road race for 1906; discord among officials.

More motorphobia boba up in Chicago; mayor and chief of police deny authorship of automobile rules.

Beach meet at Atlantic City, N. J., is postponed to Easter week, when 4 days' racing will be given.

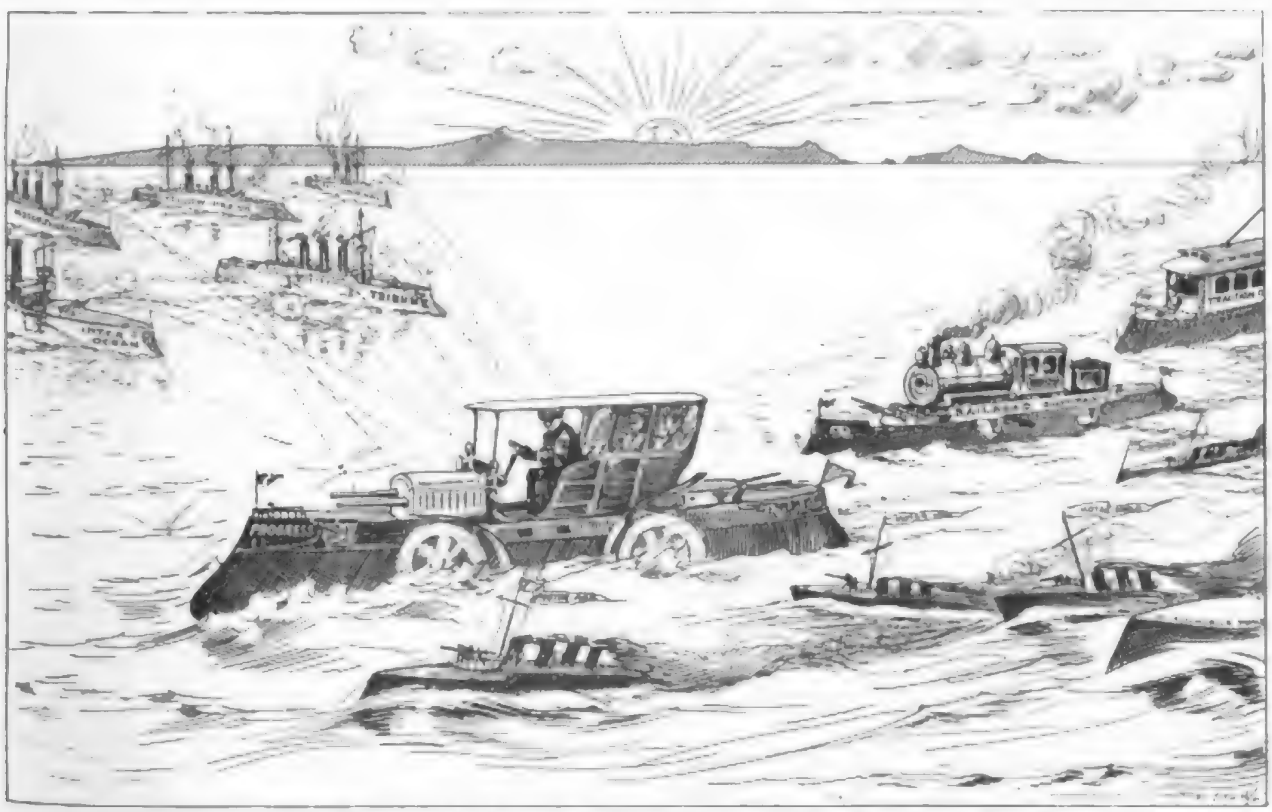
Percy Megargel, on his way to Pacific coast, fears he may be snowbound in some mountain pass.

The attacks of the motorphobia press are akin to a western wind—sort of squally, a little uncomfortable sometimes, but not at all dangerous if one is a good sailor.

Apparently Webb Jay is afflicted with a fever—the speed fever. Is it possible he contracted that malady in the hospital at Buffalo or was it just from reading the accounts of the Long Island road race?

Now that the Illinois supreme court has decided that a driver of a horse-drawn vehicle has the right to stop an automobile by raising his hand, it is suggested that the aforesaid drivers of horse-drawn vehicles would better change hands at least once in a while for fear of contracting the one-hand-raising habit and keeping the said one hand aloft and from under the bed clothes on cold winter nights.

The Fleet of Transportation is today headed by the Automobile as representing the most powerful and most modern fighting ship. The Fleet is attacked by an Opposing Fleet, which is directing all its heavy gun fire directly upon the flagship, appreciating the fact that the other ships are in no manner a menace. With all this heavy fire directed against it, the good ship Progress sails on, its armor too sound to feel the fire from the antiquated guns of its enemy, nor does its commander even deem it necessary to open fire on the enemy, knowing his own safety.



CAPTAIN "A Few Fireworks by Starboard." ADMIRAL "Admiral" "Sail On. They're Only Squibs."

Digitized by Google

JAY IS STILL RACE-MAD

Injured Driver, Out of Hospital, Says He May Take Up Straightaway Work—Goes Home

Buffalo, N. Y., Oct. 21—Webb Jay has so far recovered from his recent accident at Kenilworth park track that he left this city for Cleveland on Wednesday. He admitted before he went that he had changed his mind about the 1905 Vanderbilt cup race being the last event of the sort to be run in this country. Jay's previous view had been that the 1905 race would be so marred by accidents that it would put a stop to long distance road races in the United States. Jay thought the racers did remarkably good work this year. He referred to the fact that he himself had spent a week earlier in the year on the course and that he had said at that time that the course was about a mile-a-minute drive. The winner in the race did better than that, however, and Jay thought it a very creditable performance. Jay intimated that while he has abandoned the track he may take a flyer at some straightaway racing. He did not say exactly when it would be.

His condition was promising. During the week he spent at a hotel after coming from the hospital his leg, which was fractured on August 18, bothered him a bit, but that probably was because he had used it too much. Jay said after seeing so many disabled folk at the hospital he had come to think that there were few well persons in the world and it was almost with surprise that he saw people walking on the streets and riding in street cars and automobiles.

"It's strange," he said, "what queer ideas one will get after spending 8 weeks in a hospital."

Cleveland, O., Oct. 24—Webb Jay, the automobile driver who crashed into the fence at Buffalo Aug. 17 and whose escape from death will long be looked upon as one of the miracles of modern surgery, arrived in Cleveland from Buffalo by boat a few days ago. Jay is still very weak from the effects of his accident and he was unable to talk about the mishap. His wife, who has been his constant attendant during the dreary hours at the Buffalo hospital, said her husband talked sometimes of his accident, but his recollections were very indistinct. After the first shock of the machine crashing into the fence he knew nothing for many days. As much as possible they try to keep his mind from dwelling on the theme, for even though the physicians feel sure of his ultimate recovery, they dare not risk exciting him. Jay has every chance in favor of recovery but he will probably never be the man he was before the accident.

MOTORPHOBIA IN CHICAGO

Chicago, Ill., Oct. 23—Mayor Dunne says he didn't; Chief of Police Collins says he didn't, and so the automobile public is wondering who is responsible for the set of alleged rules governing motorists in Chicago which appeared in all the morning papers last Thursday. The city's chief executive, who had been credited with issuing the rules, denied having given them out and said it was probable the chief had. The latter cleared his skirts by claiming that the official rules were nothing more than memoranda gathered for use by the police and were not intended for the public. He blamed "some irresponsible person" for the paper getting out of his office. These rules, as published by the dailies, were eight in number and were supposed to be for the purpose of governing automobile traffic in the city streets. They were as follows:

Chauffeurs should give pedestrians every advantage.

Chauffeurs must not only not run down persons, but they should be careful not to frighten them.

Chauffeurs should avoid great speed. I would be liberal on this point in the day time and in places where the road is clear. I would be strict after dusk and wherever there are many people.

Chauffeurs should be compelled to go slowly always while in the business center and particularly at crossings.

Chauffeurs should only use the right half of the roadway, no matter how long they may be delayed before the opportunity comes to pass preceding vehicles.

Chauffeurs should not overtake and pass moving street cars. This rule I would be the most strict about, as an automobile becomes most dangerous appearing unexpectedly when retreat is cut off by the moving car.

Carry rear lights placed so as to shine on the licensed number.

Light front and rear lights at dusk, no waiting for darkness.

A. L. A. M. ON MOORE CASE

New York, Oct. 24—C. F. Cunz, head of the patent department of the A. L. A. M., interviewed by a MOTOR AGE man today, had the following to say of the service of Moore with an injunction and summons for an accounting for his infringement of the Selden patent through his use of an unlicensed imported car:

"When we sent out the announcement that an injunction had been issued forbidding the use of an unlicensed car by W. J. Moore, there followed a story that Moore was dead and some of the papers raised a laugh at our expense on the assumption that we had obtained an injunction against a dead man. This made us resolve to follow up this man Moore, who had gone to Texas. We recently learned that he had returned, was at Albany and had several trips to New York. Last Thursday night a deputy marshal served him with the injunction and summons at the Ten Eyck at Albany."

BEACH RACING IS OVER

Atlantic City, N. J., Oct. 23—At a meeting of the race committee of the Atlantic City Automobile Club, held this evening, it was decided to postpone the meet proposed for November 14 and 15 and enlarge it to a monster 4 days' racing carnival in April, beginning on Easter Monday. It was found to be doubtful whether the entry of a sufficient number of fast cars to make a November meet a success could be obtained. Besides, in Easter week touring conditions are fine, Atlantic City is at its best and the new cars are out and ready for speed trials. With these conditions prevailing, a spring meet ought to be more successful.

SNOW ON ALL SIDES

Megargel Finds it Hard Work Making His Way to the Coast—Touch of Winter

Hailey, Idaho, Oct. 19—The Reo Mountaineer leaves for Boise this afternoon, loaded for a winter's trip over the mountains. It has snowed nearly every day for the past week and the mountain trails are now covered to a depth of several inches, making the going very difficult. From all reports we will encounter snow clad roads for the next 400 miles or until we are on the western slope of the Cascades, when we will have rain and mud instead of the snow.

At Boise we will replenish our wardrobe, substituting fur and heavy flannels for the lighter clothing with which we left New York city last August, for it is very cold in the mountains, especially early in the morning and evening. For the past week we have been breaking through the ice every morning in order to secure water with which to wash and fill our radiator. Thus far, with the exception of a few icicles found clinging to the pump one morning, we have not frozen our water supply, but we take care to drain the radiator and cylinder jackets every night before retiring.

Despite the extreme coldness of the nights, the days are very warm if the sun is out bright, although running through snowstorms up here in the mountains is anything but warm work. The snow blows against our faces and stings like needles, while our hands and feet soon become like lead. Both Fassett and myself remain healthy and not even a cold reminds us of the weather we have been through. Reports from the Cascade mountain towns tell us that there are 6 inches of snow already on the passes and that both sheepmen and mountaineers have moved down into the valleys, all predicting an unusually cold and snowy winter.

The Reo Mountaineer is still running on its original set of four Diamond tires, although I shall put on a new set at Boise. The ones now on the wheels are worn entirely through the rubber. Not a point of the several hundred little dots on our rear Bailey-tread tires remains, both rear tires being worn right down to the canvas. They can be recovered, as the canvas is still in good shape and the tires are perfectly air tight.

The scenery throughout Idaho is wild and grand. The inhabitants, especially in the hills, are miners working mines for silver, gold, tin and zinc. The majority of the mines hereabouts are paying handsomely. This country was mined, or rather the surface was worked over, some 15 years ago. Now the mines go deep down into the earth and new discoveries are made almost daily.

The hunting is about the best in the United States. At Cottonwood ranch, where we stopped when I drove Old Steady across the continent—the same ranch that sheltered Dr. Jackson when he drove across 2 years ago—I found the rancher busily engaged in setting traps for a number of bears that were prowling

Digitized by Google

around his big pastures, occasionally making way with a wandering cow or calf.

One of the bears is supposed, from the size of his footprints, to weigh in the neighborhood of 1,200 pounds, and the others are smaller—2-year-olds, as Rancher Drake expressed it. Drake and his son Chris are two of the best-known bear hunters in the west. The old man has a Colorado record of 144 bears in 3 months.

The danger of getting snowed in for the winter in some lonely mountain pass continues to increase as the season advances, for we cannot make one-half the time with the present amount of snow on the ground that our schedule calls for. One thing has demonstrated itself on this trip, and that is that it is impossible to work on a schedule. I thought, after having been over the ground once, that I could figure on a schedule that could be followed all the way across the continent, but rain, high water in the creeks, impassable fords, snow and unbroken trails have played havoc with all schedules I have yet undertaken to follow.

We have doubled our supply of blankets and increased our box of grub and cooking utensils, yet when we are compelled to sleep out over night we awake nearly frozen in the morning, while we seem never to have enough to eat in our camp box.—PERCY MEGARGEL.

DARRACQ INVADES ENGLAND

London, Oct. 14—The first of the French motor manufacturing concerns to actually invade British soil in the one way which can be permanent is Darracq's. This company, however, is mainly owned by a few English capitalists and therefore the decision to acquire a factory on the bank of the Thames, almost opposite the houses of Parliament, is not at all surprising. The major portion of the Darracq output has been bought in this country, for the cars are stylish looking and cheap for the power given. The repairs question, however, has given considerable trouble owing to everything having to be got over from Paris. The decision to commence manufacturing on this side of the English channel, therefore, solved a growing difficulty as well as decided a question which was bound to have arisen sooner or later. The factory is one which has been used for engineering works and is fairly well equipped. It has a ground area of about an acre and will be fitted out with the most modern plant for motor car manufacture.

TALK OVER GLIDDEN TOUR

New York, Oct. 20—Augustus Post, A. R. Pardington, M. M. Belding, Jr., W. C. Temple, E. T. Fetch and A. G. Batchelder, the sub-committee in charge of the Glidden tour of 1906, had a conference with the donor of the cup at the A. C. A. this afternoon. There will be an early announcement of the route and date.

A further sub-committee, made up of Post, Pardington, Belding and Batchelder, were appointed to draw up rules and recommend the route and date. It is practically assured that Canada will be included in the itinerary. Mr. Glidden thinks that two divisions—competitive and pleasure touring—would be impracticable. He thinks pacemakers would stop the fast driving encountered this year.

TALKS A GERMAN RACE

Dr. Stoepling, in Control in the Fatherland, Favors Contest in His Country Next Year

Berlin, Oct. 12—That Germany intends taking up the running where France leaves off through her refusal to defend the Bennett and Vanderbilt cups is evident in the light of recent developments. The resignation of Count Adalbert Sierstorpff as president of the technical committee of the Automobile Club of Germany shows there is discord in the ranks of the organization and that the racing element is in control. He quit his job because he was not in accord with his colleagues who want an international meeting this fall for the purpose of taking concerted action on the question of speed competitions. This leaves Dr. Levin Stoelping in active control of the Automobile Club of Germany and as he is a firm believer in racing, it is believed Germany will promote an international road race next year and that she will be given firm support by the other countries, including France, despite the latter's stand on the question of competitions of this sort. The doctor's views in the matter were clearly given the other day to a representative of the European edition of the New York Herald.

"I am strongly in favor of racing for automobiles," said he. "Every country is Belgium, Italy, America, England, yes, and France also. Here we are strongly in favor of it.

"What is this thing the French propose? It's a stillborn child. What gentleman automobilist is going to tour about for a fortnight along with a whole crowd of French chauffeurs? None, and, after all, what would it be?

"Just this: a couple of hundred automobiles may start; 185 of them will be French and fifteen so-called foreign machines. So a grand procession will start out for the pleasure of Count de Dion and his friends, and afterward there will be a grand flourish of trumpets over the triumph of the French automobile industry."

Dr. Levin Stoelping looked unutterable things, in which contempt predominated.

"Have you any news concerning the international meeting you proposed to call?"

"Not at present," he replied.

"Do you expect a favorable vote?"

"Yes; certainly."

"Then you consider that speed racing is still useful?"

"Certainly; I hold that speed trials have still a great deal to show, and speed trials are bound to be popular. France will come in. She will call it a pneumatic race, or any name you like, but a speed race is sure."

"And you propose having one?"

"Yes, if the French won't organize it we will. I, myself, believe that a speed race at Hamburg would be an enormous success and the French couldn't afford not to take part."

Through the same newspaper the Germans have heard the reply of the Marquis de Dion to Dr. Stoepling's remarks. The marquis says: "Why not let them race? I am sure I have no objection to their doing so if they gain anything by it. The French club has enough to do looking after the interests of the industry under its immediate care without preaching to other clubs. The fact that speed contests are to be held in Germany and America will in no sense affect our program in France. I don't say that some French firms will not take part in such contests. That would be their own affair. If you would like me to tell you what I think of the state of affairs in Germany I should say that instead of organizing speed contests the automobile clubs there would be doing vastly greater service to the industry in attempting to bring about an improvement in roads."

PIERCE GIVEN ROAD TEST

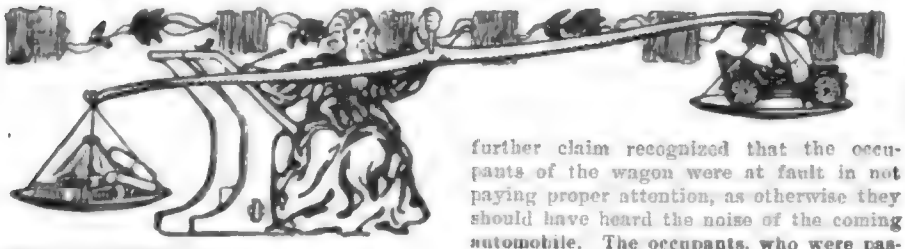
Buffalo, N. Y., Oct. 21—Since the Packard 24 made its fast run from Rochester to Erie a few days ago considerable rivalry has sprung up among Buffalo makers and dealers regarding the speed of cars, and the Pierce company sent out a car on Tuesday to show what could be done over a typically rough American road. Driven by Charles Sheppy, the car carried F. A. Nickerson, George Ulrich and H. Schneider, of the Pierce force, and J. R. Gameter, of the B. F. Goodrich Co., of Akron, O. On Tuesday afternoon Sheppy drove to Ashtabubla, where the party remained over night. Next day the car was driven to Akron through rain and deep mud. The Buffalo men spent Thursday inspecting the Goodrich plant and left for home at 9:50 o'clock Friday morning. Between Akron and Cleveland the road was not only hilly but very rough because of rain and snow of the night before. In Cleveland a 20-minute stop was made for gasoline and the noon stop was at Ashtabula, where 70 minutes were lost for luncheon. At Fredonia the car stopped an hour while the occupants took dinner. That was the last stop before the car reached Buffalo. Through the Indian reservation the road was very bad, but after that it was fair and the car reached this city at 9:30 o'clock, having covered the 236 miles in 9 hours and 30 minutes running time.

LEIPZIC HOLDS A SHOW

Berlin, Oct. 14—For the eighth time Leipzic has opened its annual automobile show with due ceremony and speeches by the city authorities and men prominent in automobile manufacture and sale. More than in former years types of machines for industrial purposes are making their appearance among the exhibits of touring and pleasure vehicles. As is usual in Germany and France the motor cycles and tricycles occupy a much more prominent place than in American exhibits of a similar nature, the tricycles for two passengers making an imposing array. The Mercedes people as usual have a prominent display, while the Torpedo, Hering and Richard and other large firms occupy ample space. Some prominent exhibitors are E. Nacke, Coswig; V. C. Schilling, Orlin & Schlundt, the Superior, Fahrrad, Robert Vieweg of Dresden, A. Horchand & Co. and Edmund Ulmann.

Digitized by Google

LEGAL LIGHTS AND SIDELIGHTS



SPEED LIMITS

Speed limits in force in ten of the leading eastern states are as follows:

Connecticut—Twelve miles per hour in cities; 15 miles in country.

Delaware—None stated, but slow down upon approaching a horse.

District of Columbia—Six miles per hour at cross streets, where there are car tracks; 12 miles per hour in city, where there are no car tracks; 15 miles per hour in country.

Maryland—Six miles an hour in built-up sections and at crossings and curves; 10 miles an hour elsewhere.

Massachusetts—Ten miles an hour in cities; 15 miles an hour in country; 8 miles an hour at curves and intersections.

Maine—Eight miles an hour in built-up sections, except where local laws permit greater speed.

New Jersey—Twenty miles an hour in country and where houses are 100 feet apart; reasonable speed elsewhere.

New York—Ten miles an hour in business and closely built-up sections; 15 miles an hour where houses are 100 feet apart; 20 miles an hour in country.

Ohio—Eight miles an hour in closely built-up sections; 15 miles an hour in other sections of the city; 20 miles an hour in country.

Pennsylvania—Ten miles an hour in cities; 20 miles an hour in country, and 10 miles an hour on curves, descents, intersections and where meeting horses.

Rhode Island—No speed laws. Must operate cars at a safe speed and stop motor if necessary to prevent accidents.

GERMAN IDEA OF LIABILITY

According to mail advices from Germany, the Hanseatic supreme court at Hamburg has handed down a noteworthy decision with reference to the liability of automobilists. Upon a country road in Germany an automobilist had overtaken a milk wagon without a previous signal. The horse attached to the milk wagon took fright and the driver and his wife were thrown out of the wagon and received injuries. The court fined the automobilist $35. The couple then brought a civil suit for damages against the motorist and the lower court held the suit to be justified. The appeal by the motorist was not entertained by the Hanseatic supreme court. The court stated it to be the simple duty of a careful motorist to give notice by a signal of the intention to overtake. To the claim of the defendant that the signal appliance had failed, the court remarked "that the automobilist should have waited until he could have given some other the wagon." Neither was the effective signal before passing further claim recognized that the occupants of the wagon were at fault in not paying proper attention, as otherwise they should have heard the noise of the coming automobile. The occupants, who were passengers upon the wagon, were not bound to pay attention, in the court's opinion. As the defendant by his carelessness had caused the accident, he was legally liable. The amount of damages will to fixed later on, it is announced.

WINK AT VIOLATION

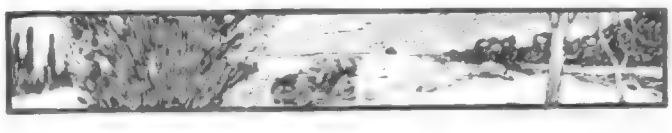
The members of the San Francisco park commission, after listening to the request of a delegation of automobile dealers, decided to let stand the ordinance which prohibits automobile driving along the south road after 11 o'clock at night. The police will be reinstructed, however, to make no arrests for such illegal driving unless a nuisance is committed. This action gives the privileges of the roadway to the motorists and leaves with the commission the power to enforce the ordinance if the protection of the public rights demand it.

HOLDS AGENT BLAMELESS

The case of Lettie Marshall against the Washington Electric Vehicle & Transportation Co., agent for the Columbia in Washington, D. C., in which Mrs. Marshall claimed damages in the sum of $10,000 for the death of her husband, Robert Marshall, who died as a result of injuries received by him in a collision with one of the automobiles of the defendant company a year ago, was tried last week, and resulted in a verdict for the company. It was contended by Mrs. Marshall's attorneys that the car was operated by an incompetent chauffeur and that the company was liable for that reason. The jury, however, took the opposite view, and decided in favor of the automobile company.

PUZZLED BY SCORCHING EVIL

The Automobile Club of Cleveland has pledged to prosecute reckless automobile drivers and has publicly announced that if any person has evidence of gross recklessness against any operator, and will present it to the club, the organization will prosecute the lawbreaker even though he be a high official in the club. There are wide differences of opinion among prominent automobilists as to the best course to be pursued in eliminating the evil. Secretary George Collister of the club advises abolishing the state speed limitations, which have proven faulty, and the enactment of a strong criminal negligence law which would punish reckless driving of any sort. State Senator Shallenberger, a prominent club member, takes the contrary view. He suggests leaving the state law providing for slower speed in business districts as it is at present, and allowing the cities and towns to define by ordinance as to what are built up portions. By setting down definite limits, offenders could not escape by the necessity for proof as to what constituted a business district. There is one thing certain, though, and that is that the Automobile Club of Cleveland is determined to stamp out this evil. Actions already taken are beginning to have their effect.



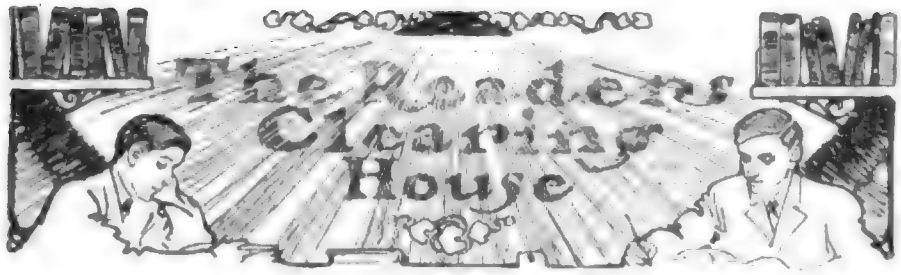
MINNEAPOLIS REGULATIONS

The substance of the Minneapolis city ordinance is as follows: All persons operating machines must have a license. They must make application for the same before an examining board. They must not exceed an 8-mile speed limit in the business portions of the city nor a 25-mile limit in the outlying districts. They must not approach a crossing when a pedestrian is upon the same at a speed to exceed 4 miles an hour. The muffler must be used. A horn or bell must be provided for use in case of imminent danger. The operator should be governed by the law of the road—turning to the right when meeting a vehicle coming towards him in the opposite direction and turning to the left in passing a vehicle or person moving or headed in the same direction. At night the vehicle should be provided with a lighted lamp with white lens on front and a lamp in the rear with a red lens and a white lens so arranged as to cast a light upon the license number. These numbers must be 4½ inches in height. For failure to comply with any of these requirements a fine of not less than $5 nor more than $100 can be imposed or 10 to 60 days in the city workhouse meted out. The state law is very similar in every respect, but in addition specifies that when an operator is signaled by a driver of horses he shall stop his machine until the horse vehicle has passed the danger point.

NOT LIABLE UNDER OHIO LAWS

Mrs. Edith M. Bailey, the Cleveland, O., society woman charged with manslaughter as the result of running over a laboring man on the viaduct last August, has been released after a series of harassing examinations and trials. The coroner's jury exonerated her, but she was tried before the police court and bound over to the grand jury for further trial. Her release was due to the decision that she could not be held for criminal negligence under present Ohio laws. It was stated that under the existing laws and recent decisions of the supreme court there is no such thing as criminal negligence in Ohio. A similar case was decided by the Ohio supreme court a short time ago, when a man riding on a bicycle in violation of an ordinance, killed another and the supreme court held there was no law under which he could be held for the alleged negligence. This is a parallel situation in every particular. The same question was raised during the coroner's investigation at Mentor, O., of the recent wreck to the Twentieth Century limited. It was held that even if the wreck was due to someone's negligence, the person to blame could not be punished.

Digitized by Google



LACQUER FOR BRASS

Chicago—Editor MOTOR AGE—MOTOR AGE will probably win the lasting gratitude of a large number of its readers if it is able to publish the name or formula of an enamel or lacquer which could be applied to highly polished brass work, lamps, etc., to retain their brightness without being affected by the weather, grease or gases. Most polishes leave the surface in such a chemically clean and raw condition that moisture quickly attacks and tarnishes it. Grease paste polishes make a less brilliant but more permanent polish, but in some localities polished brass loses its luster very quickly regardless of the kind of polish used.—V. A. MATTESON.

Lacquering to be properly done requires considerable patience, and facilities which are not usually at hand. A brass polisher would better do this. All lacquers are more or less influenced by the weather, so it is doubtful whether a lacquer could be obtained that will be at all permanent. The amount of ammonia in the mud would soon discolor the lacquer. Experiment might produce something for the purpose, but MOTOR AGE cannot render assistance in this direction.

COIL TROUBLES

New Paris, Ind.—Editor MOTOR AGE—I have a three-terminal Dow coil for a motor cycle which gives a very intense spark at the contact but which burns through the finest platinum in a short time. The motor seems to run well as long as the points last, but will not run at all with anything but the finest platinum. The secondary seems to make a good jump but rather bushy and red and does not appear as blue as the primary. At times there occurs a faint click in the coil; then the report is not so great at the contact. Is the four-terminal coil easier on contact points and does it give a better spark, as claimed?—SUBSCRIBER.

There will be no advantage in using a four-terminal coil. Three cells of dry battery may be sufficient for the coil you have, although fewer than generally used. The condenser has been injured so as not to perform its function. Do not try to repair this but ship it to the Dow people to have repairs made as they should be.

TROUBLE IN STARTING

Cedar Rapids, Ia.—Editor MOTOR AGE—I am having considerable trouble in starting my four-cylinder car these cold mornings, often having to prime the cylinders. After the engine starts one or more of the cylinders will miss for from 5 to 6 minutes. After that it is all right the rest of the day. I know the battery and connections are in good shape. What is the trouble and can the same be overcome with little trouble?—W. M.

It is well known that gasoline will not volatize as readily in cold weather as when it is warm. The probability is that the gasoline feed to the carbureter is adjusted to such a close point that there is not enough volume to give off a sufficient vapor. Adjust the needle valve so as to give the carbureter more gasoline. If this does not remedy the trouble then it is likely that the supply of air is too great and the air intake should be cut down.

HOT RIVETING

Buffalo, N. Y.—Editor MOTOR AGE—In the construction of the frame of an automobile which is better, to have the parts of the frame hot riveted or cold riveted?—J. JONES.

Cold riveting is generally used in automobile construction. The joint made is perfect and strong. There is no change in the size of the rivet when riveted cold. The hot rivet necessarily contracts in the shank. The cold process does away with the fire and additional labor to handle. Cold riveting in modern plants is performed by a pneumatic riveter, which produces a better job more quickly done.

ACCESSIBILITY

Reading, Pa.—Editor MOTOR AGE—Your communication from your London correspondent in your issue of October 12 re the Duryea system seems to have been written by someone not fully acquainted with the facts. The fact that the English Duryea company is looking for capital is no reason for a criticism of the system or of the men behind it. It is a fact, to which we point with pride, that the Duryea vehicle is one of the very few vehicles that has been put on the market in a small way and with an exceedingly small amount of capital and that has continued to be manufactured and show evidence of growth. If this is a losing fight, then we are unable to see it. It is to us evidence of merit and vitality of the highest order. The failure to catch on must be attributed to lack of quantity instead of lack of style, for it is clearly impossible that a vehicle made in small quantities can be sold and delivered in large quantity, and it is also impossible to deliver in large quantity without sufficient capital to build in large quantity. It is also well known that capital is particularly timid about taking up advanced things. Any well informed man can point out plenty examples of this. Bell Telephone stock found no takers and I have friends who sold Standard Oil stock in its early days in order to purchase something supposedly better. That the engine in the Duryea is inaccessible is another error, for the reverse is the truth. All the motor bearings can be reached in 30 seconds for adjustment and any part of the vehicle can be removed in ½ hour. I feel safe in saying that on an average the parts of a Duryea vehicle taken one at a time, can be removed in one-fourth the time that similar parts of other vehicles require. Every mechanic knows that the power should be near the work and if the designer knows how, he can put all the power required under the operator's seat, as is done in the Duryea. This means that sooner or later motors will again be located at the rear of the vehicle instead of at the front. The reasons for this location are too many to be given in this short letter, but it will give me great pleasure to state some of them in an article on this subject and also to see a vigorous defense of the motor in front by some of those people who prefer reaching over muddy wheels, removing muddy fenders or leaning over a hot radiator in order to get at a motor placed in front in order that it may be sold to the public as accessible.—CHARLES E. DURYEA.

ANTI-FREEZING SOLUTION

Motor Age recommends the following as the best anti-freezing solution, all things considered: Use 4½ pounds of pure calcium chloride to a gallon of warm water. Mix and filter before placing in radiator or tank. Replace evaporation with clean water and leakage with solution. Calcium chloride can be procured from any wholesale drug house, commercially pure calcium chloride selling in the wholesale houses at 5 cents per pound in 50-pound lots. It ought to retail for about 8 cents per pound. Most automobile supply houses can supply it also.

PRONUNCIATION OF CHAUFFEUR

Birmingham, Ala.—Editor MOTOR AGE—I would like to know the correct pronunciation of chauffeur. Is it pronounced "shaffer," with the accent on the first syllable, or "shaf-four," with the accent on the last syllable?—R. W. M.

Neither is correct. It is almost impossible for any but a Frenchman to give the exact pronunciation and it is still more difficult to put such a pronunciation in cold type, as MOTOR AGE has said before. As near as can be told in print the word should be pronounced "show-fer," without accent.

CHOICE OF CARBURETERS

Grinnell, Ia.—Editor MOTOR AGE—Please tell me what is the best carbureter for a Pierce stanhope. Mine has never given satisfaction. I am afraid to go any distance from home. Please answer in the columns of the Readers' Clearing House. —K. B. W.

It is a rather difficult matter to select a maker of carbureters as having the best without seeming to show a favorable prejudice. MOTOR AGE can only advise writing to the carbureter manufacturers advertising in this issue.

Digitized by Google

Automobile Development

Silent Knight Touring Car

THE Silent Knight, which bears out its name, is a new 35 horsepower touring car manufactured by Knight & Kilbourne, Kingsbury and Huron streets, Chicago, Ill. It is fitted with a vertical four-cylinder, four-cycle motor, which differs very much from anything previously brought out by the gasoline fraternity, not only in America but Europe as well. The cylinders are unique in that the ordinary mechanical inlet and exhaust valves are done away with and in their place is a pair of reciprocating sleeves in each cylinder between the cylinder casing and the piston. In these sleeves are ports for admitting mixture and letting out the exhaust. In addition to this novelty, the makers have a perfectly spherical combustion chamber, the head of the piston and cylinder both being concaved and the spark plug placed in the center of the latter, giving a spark nearly in the center of the chamber.

Charles Y. Knight, the inventor, has in his development of the sleeve proposition as a substitute for valves, kept before him the securing of four points in gasoline construction—absence of pounding poppet valves, spherical combustion chamber, intake and exhaust openings at opposite sides and an exhaust in the bottom part of the cylinder through which the hot explosion gases pass without traveling back through the length of the cylinder to the top exhaust ports.

The Silent Knight car has been well tried out and the working of the sleeves tested, as well as the cooling and lubrication of them studied. One car has within the past season traveled over 6,000 miles and on examination the sleeves have been found by micrometer not to have worn. During that period of testing the lubrication system has worked without trouble, and to show that the cooling system offers no difficulties, the motor has often been run without water in the jackets. Another car has been in commission for over 1 year and another has been used for a shorter time. The company is pushing the completion of its first cars for the market and will put out from twenty-five to fifty for 1906.

Without reservation the Silent Knight's four-cylinder gasoline engine can be termed a sweeping innovation in the realm of gasoline engines, being built as it is without poppet inlet and exhaust valves as used in the regular four-cylinder gasoline motor. Every user of gasoline automobiles is familiar with the circular valves, with long stems surrounded by heavy coil springs for holding the valves closed and also with the push-rods and camshaft within the crank case for opening the valves at the proper time.

In the Silent Knight two sleeves work between the piston and the water jacket casing and in these sleeves are similar inlet and exhaust ports that register with one another and that conjunctively pass over the stationary port to the exhaust or intake pipe through the water jacket casing for taking in or expelling mixture, and during exhaust strokes and during the compression and explosion strokes do not register with one another, nor do they open to the cylinder chamber during pressure, thereby keeping the cylinder an enclosed chamber similar to the valve type of today.

The construction of the cylinders can best be followed from a passing study of the vertical end section, shown to the right of the vertical side section of the motor. The casings, cast in pairs and water jacketed, have the walls A made with a ¾-inch water space and are bolted to the top of the crank case B. The cylinder head C differs from the ordinary in that it sits into the top of the cylinder as a cork in the neck of a bottle, being bolted at the top by a flange with vertical bolts to the top of the cylinder walls. Between the head and the wall is quite a wide space, L, in which the sleeves have room to move up and down. On the head are four compression rings as in the gasoline piston, these rings serving to hold the compression between the head and the inner sleeve. The inner sleeve, H, is next to the piston, is machined all over and has a wall 3-16-inch thick. It has on the bottom at the left side an integral lug M by which it is secured to the short connecting rod O that has its other end attached to the eccentric shaft Q, which corresponds with the cam shaft in the ordinary gasoline engine. The outer sleeve K has a wall thickness of only 1-16 inch and works between the inner sleeve and the cylinder walls. It, too, like the inner one, has on its lower side, shown at the left, a lug N for securing to the short connecting rod P that joins the sleeve with the eccentric shaft. This eccentric shaft is gear-driven by gears on the front end of the crankshaft, the gears being proportioned on a two to one principle so that the eccentric shaft is driven at the same rate as a camshaft, the sleeves H and K being moved up and down just half as often as is the piston. The movement of each of them is but 1 1-16 inch, while the piston has a stroke of 5½ inches. The sleeves are made from gray iron and are turned on specially made jigs so that uneven grinding is impossible. They are a snug fit, the outer one in the cylinder casing and the inner within the outer.

Both of these sleeves have three ports or openings in their walls, two on opposite sides near the top and one at the bottom. The latter one is shown at R and is what is commonly known as an auxiliary exhaust, which in this case is the main. This port is made by cutting out of the sleeve a strip of metal 5-16 inch wide and equal in length to half of the circumference of the sleeve, the size of the port if made on a flat piece of paper would be an oblong 5-16 inch wide and 7 1-14 inches long. This port is so located that when the piston is on the explosion stroke the port begins opening, when the piston is approximately ½ inch from the bottom dead center and remains open until closed by the piston on the exhaust stroke, the crank pin thus traveling about 100 degrees while the port is entirely or partly open. The port R in the illustration is shown as it actually is when the piston is at the bottom dead center on the explosive stroke, the ports in both the outer and inner sleeves registering perfectly, as both are the same size and both registering with the exit opening G through the cylinder walls from which leads a separate muffler piping.

The ports in the top of the sleeves are more complicated. Mixture enters at the left side, in the illustration, through the opening E, and in the outer sleeve is shown the port T considerably above the inlet opening in the cylinder casing, while the port V in the inner sleeve is just opposite or registering with the top part of the intake opening. On the opposite side of the illustration is the scavenging exhaust port F in

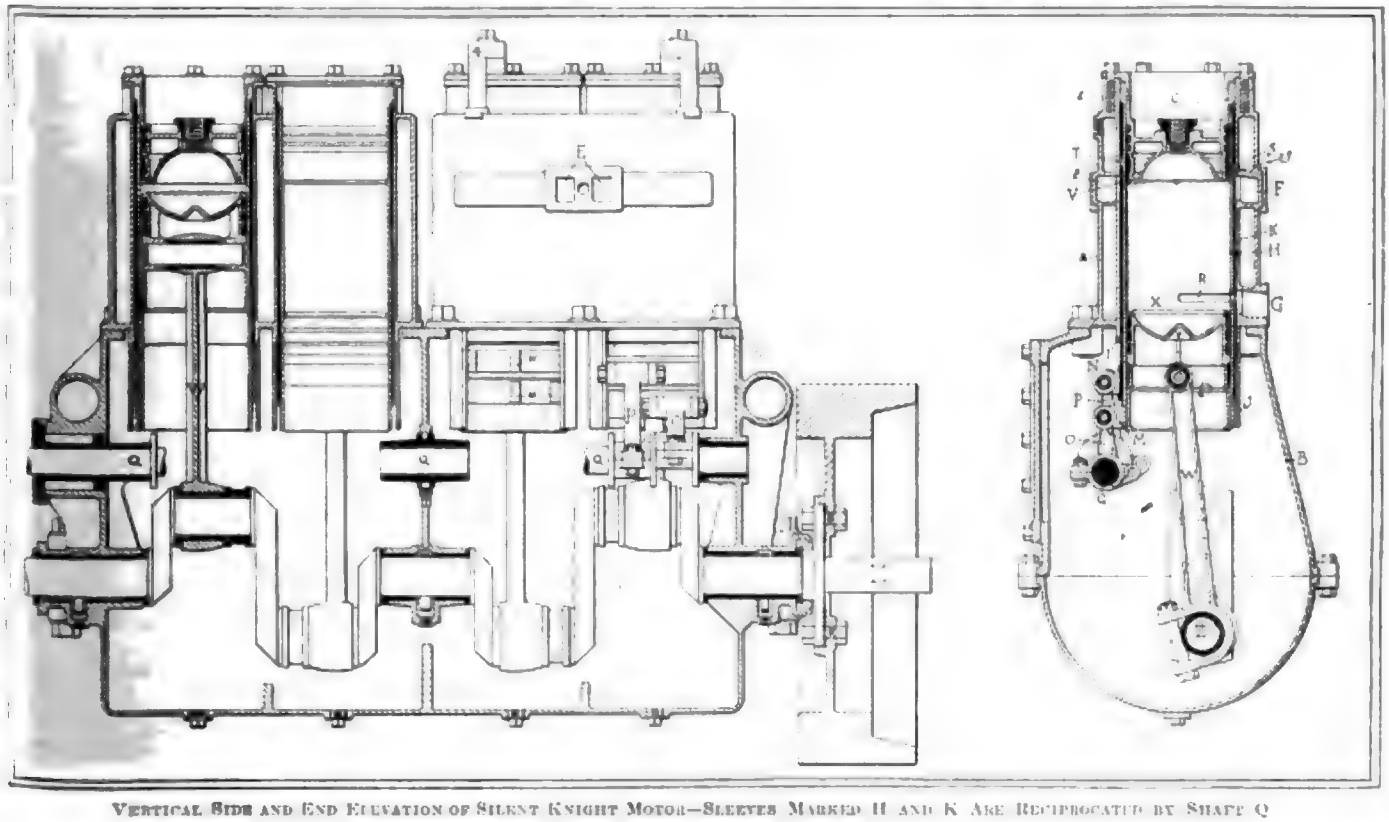
Digitized by Google

the cylinder casing, and in the inner sleeve is the port U and in the outer sleeve the port S. It will be remembered that the piston is just at the bottom of the explosion stroke and that the exhaust stroke is about to commence, the majority, 90 per cent, the makers claim, of the exhaust having passed out through the main and bottom port, and as the piston rises, the sleeves on this stroke are drawn down so that the ports U and S in the sleeves will register perfectly and both will move down and register with the opening F, which is connected by pipings with the muffler. As is in the view, neither U nor S register with F during the first portion of the exhaust stroke, when the lower or main exhaust is open, but both are later brought into perfect register and a free passage offered to the remaining gases. This divides the high and low pressure exhaust, preventing back pressure from the high pressure port during the scavenging portion of the exhaust stroke. This system is further carried out by the intervention of an extra muffler in conjunction with the main exhaust muffler. Looking across the illustration it can be seen that the inlet ports are closed by the thin outer sleeve. This inlet port is not opened until the piston is slightly past the top dead center after the scavenging exhaust ports close and the suction stroke commenced, thus making it impossible for the exhaust gases to enter the inlet pipings. When slightly past the top dead center the inlet ports on both sleeves register with the port E and such register remains until the piston is slightly past the bottom dead center and the compression stroke commenced. The inlet port in each sleeve is 5-16 inch wide and practically 5 inches in length, so that a port of 5-16 by 5 inches is open on the whole suction stroke for admitting mixture. The exhaust ports on the top and the intake ports are of the same size. So that the exhaust ports on the right side do not remain open, as it were, while the inlet ones on the left are in register, it can be noted that the former ports on the inner sleeve are slightly higher than the inlet one and that on the outer sleeve the inlet port is slightly higher than the exhaust. The sleeves are set so that the inner one leads the outer at all times by ⅛th revolution of the eccentric shaft.

From the illustration it can be noted that the cylinder walls project considerable into the top of the crank case, the part J at the right being practically as low as the bottom of the piston, but on the side of the piston next to the connecting rods working the sleeves, the cylinder wall is cut away, the short remaining part shown at J, this being done in order that the sleeves may be reciprocated. In the side view of the engine, in which the two inspection plates of the crank case are removed, the construction of the eccentric shaft can be studied. It is a three-bearing shaft with a diameter of 1⅛ inches for all bearings. The shaft is turned from a solid forging and made with the end bearings, in the ends of the crank case the front one 3½ inches long, and the rear and center ones 2½ inches. The bearings are made from bronze with a babbitt lining. The sleeve connecting rods are made from bronze; those working the inner sleeve, being 2¼ inches from center to center and those for the outer sleeve 3⅜ inches from center to center. The attachment to the two lugs, M and N, on the bottom of the sleeves is by distance sleeve on cross bolt and where they are secured to the eccentric shaft a hinged cap is used, the cap being held at the side opposite to the hinge by a screw bolt, nut and cotter pin, oiling arrangements being provided for the interior of the bearing.

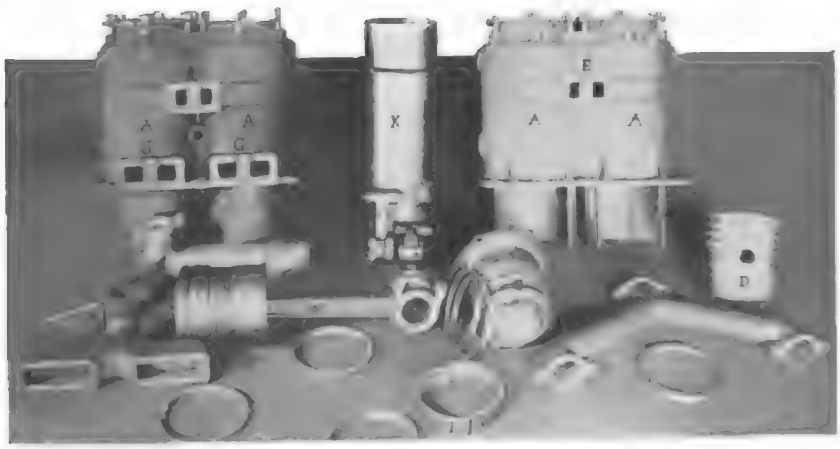
The crank shaft is a four-throw forging with the throws set at 180 degrees, the center and end ones being arranged in pairs. The shaft, with a diameter of 1⅝ inches, revolves on three bearings, two end ones and a middle one between the pairs of cylinders; the end bearings are 3¼ inches long and 1⅝-inch in diameter, and the center one is 4 inches long and has a diameter of 1⅝ inches. The crank pin bearings are 3¼ by 1⅝ inches, and the wrist pin bearings 2¼ by ⅞ inches. All bearings are made from bronze with babbitt linings and in the latter are cut angular grooves for the distribution of the lubricant. On the rear end of the shaft is a 6-inch integral flange, turning with the shaft and to which the flywheel is bolted and keyed; the latter has a rim weight of 110 pounds and a diameter of 16 inches. The crank shafts are hardened and finally ground to size all over.

The crank case offers some slight novelties in its construction. Aluminum is the metal used exclusively. The case proper resembles an oblong box with the depth and width practically equal. The bottom is entirely open and receives the bottom part of the case, which serves as an oil basin and aids in carrying the end bearing of the crank shaft, the center bearing of the shaft, however, being carried entirely on the top part of the case, admitting of the bottom part being removed without interfering with any of the motor parts except the end bearings. In the top of the case are two oblong openings, in which the pairs of cylinders rest, being bolted in place. In the left side are two big inspection holes covered by aluminum plates secured by thumb screws. The case is partly divided between the pairs of cylinders by a partition which provides a central bearing for the crank and eccentric shafts. A subframe is not used, but in the side views of the motor can be seen V-shaped projections on either end of the top part of the case with large cross holes in each.



VERTICAL SIDE AND END ELEVATION OF SILENT KNIGHT MOTOR—SLEEVES MARKED H AND K ARE RECIPROCATED BY SHAFT Q

Digitized by Google



CYLINDER CASTINGS, SLEEVES, PISTONS, CYLINDER HEADS AND PISTON RINGS

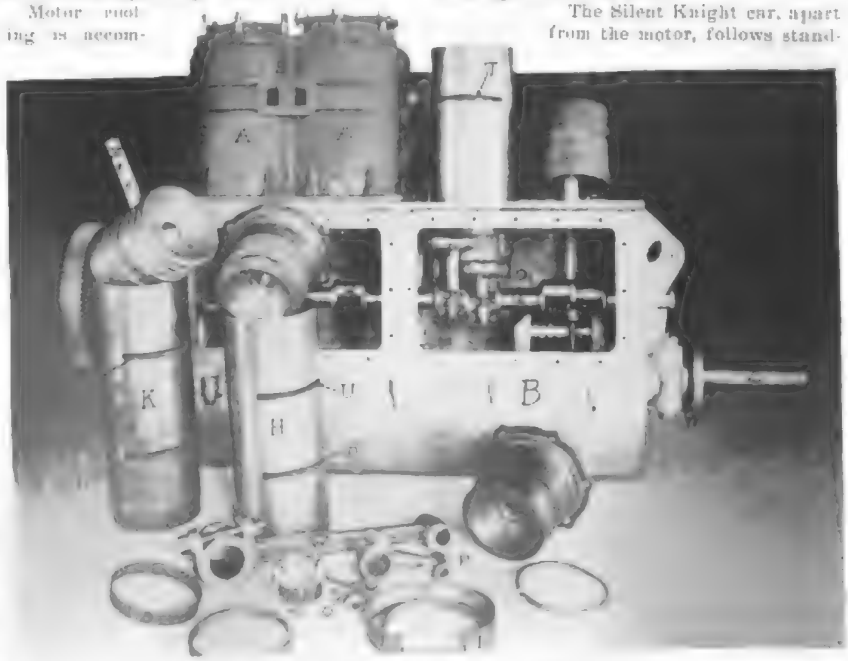
Through these holes passes Shelby tubing, extending from one side piece of the main frame to the other, and secured to each by pillow-block brackets. Collars and tapered pins will be used on the tubing to prevent the slipping of the motor crosswise on them.

Motor lubrication follows new lines in that the much talked of splash system in the bottom of the crank case is not used. There is, however, beneath each crank throw four oil sprays for furnishing all lubricant. From these sprays the oil is sprayed by pressure feed over the crank shaft bearings and also over the crank pins, and all oil falling in the bottom of the case immediately runs out into the oil reservoir from which it is again passed through the spraying nozzles. The lubrication of the sleeves was looked upon by many students of the Silent Knight as one of the most difficult features of its construction, but as the proof of the pudding is in the eating, so the test of the lubrication is in the running and in this the Silent Knight has not experienced the slightest difficulty. Oil is fed into the top part of the cylinders in the space marked L between the cylinder heads and the walls and in which space the top of the sleeves work. In this way the oil works between the two sleeves as well as between the inner sleeve and the piston and between the outer sleeve and the casing wall. The real place, however, to lubricate is between the piston and the inner sleeve, as here is the fastest movement and consequently the greatest friction. But this is not so great as between the ordinary piston and the cylinder. In this case, when the piston is traveling on the up stroke, the compression one, the inner sleeve is moving up with it, not so fast it is true, but while the piston travels 5½ inches, the sleeve travels 1 1-16 inches in the same direction and on the down stroke, the explosion one, the sleeve travels with the piston at the same relative speed. On the suction and exhaust strokes the inner sleeves and the piston are traveling in opposite directions. Between the sleeves the amount of oil needed can be estimated from the fact that the travel of each is but 1 1-16 inches and that most of the time they are traveling in the same direction, though not always at the same speed. Between the outer sleeve and the cylinder wall the movement is a reciprocation of 1 1-16 inches, half as often as the piston reciprocation. The oil flows and works between the sleeves and the ports being so large in the sleeves the makers claim that by simply injecting oil into the cylinder wall between the casing and the outer sleeve that it will soon work through the ports, down between the sleeves and between the inner sleeve and the piston. The top of the piston being hollowed there is a danger of the oil flowing into the cavity, which, however, is prevented by the vertical flange around the piston heads shown at X. Furthermore the conical raise, Y in the center of the piston head prevents accumulation of residue oil at the center or extreme bottom of the cavity at the back of the piston and in turn prevents direct splash up to the spark plug point, located in the center of the cylinder head, causing the splash to take place in ring form around the sparking center.

Motor cooling is accomplished by water jacketing the cylinder casing, and also the cylinder heads, the water to the latter being transferred from the general water system through the tubings, 4, passing over the tops of the cylinders. In the 6,000 miles the demonstration car has run, cooling difficulties have not been encountered. The inner sleeve, working next to the piston, is naturally the source of the greatest heat generation, but this sleeve, it will be remembered, is traveling in the same direction as the piston on the two heat-producing strokes—the compression and explosion strokes. In each of these strokes the piston travels the full length of the stroke—3½ inches—but while doing this the sleeve travels 1 1-16 inches, so that in reality one-fifth of the travel of the piston is done away with. The top of the sleeves—that part around the combustion chamber—will come in for the greatest amount of heat, and, as can be seen in the end section, the tops of the sleeves are passing between the two water-jacketed surfaces—the water jacketed cylinder casting on one side and the water-jacketed cylinder head on the inside. In defense of this scheme, the makers claim that the reciprocation of the sleeves, one within the other, aids in distributing the heat over a long surface instead of keeping it in one place. Water circulation is maintained by a gear-driven pump, connected in the circuit with the radiator. Behind the radiator is a fan for cooling.

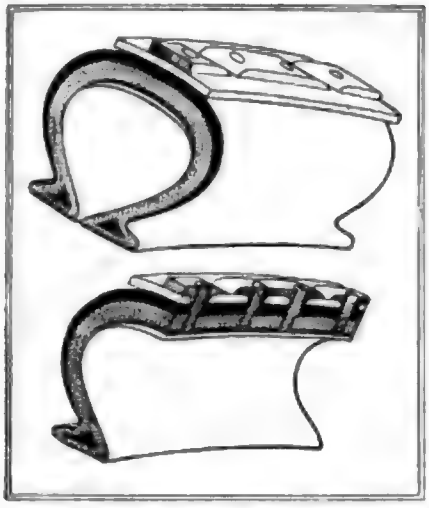
The compression rings in the piston are three in number, placed in the top part of the piston. The wrist pin, instead of being pinned in place, is held by a broad snap ring, 3, shown in the side view. In the cylinder head are three compression rings against which the inner sleeve works and in the lower part of the head is a broad cut-off ring composed of two semi-circular parts, marked 1, within which is an expansion ring for holding them against the sleeve.

The Silent Knight car, apart from the motor, follows stand-



MOTOR SHOWING SLEEVES IN POSITION, AND OTHERS IN GROUP

Digitized by Google



HERAULT'S METAL TREAD TIRE

ard lines of construction. Transmission from the crank shaft is through a friction clutch and three-speed and reverse sliding gear transmission with shaft drive to the live rear axle of the floating type, Pressed steel is universal in the frame construction. The wheel base is 112 inches, the weight 2,600 pounds and regular artillery wheels and pneumatic tires are fitted. Ignition is by jump spark with the batteries, coil and commutator carried in the battery box, so that the only portion of the system visible is the four cables to the plugs and the plugs themselves.

BRINGS OUT WOOD TIRE

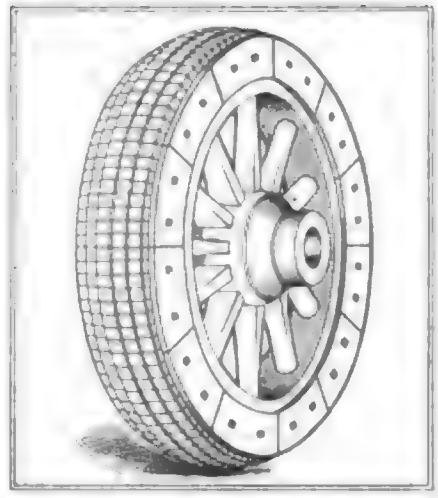
All manufacturers, and especially users of heavy motor vehicles of the commercial class, know that the item of keeping tires in good order is an expensive one and necessary as well. Rubber is now almost exclusively used, but there are indications that wood will be used very extensively in the future. The illustrations shows a heavy truck wheel manufactured by the American Wood Tire Co., of Chicago, Ill. The construction of the tire is such that each individual wood block is clamped tightly so that it cannot get out of place. Means are also provided whereby any desired portions of the tire may be repaired or new blocks inserted without removing the whole tire. Wood is claimed to possess a number of advantages over rubber when used in a vehicle tire, but practically the only advantage which rubber has over wood is its elasticity. Wood is a great deal cheaper than rubber, even when it is specially prepared and treated so as to better withstand the influences of weather. It will wear fully three times as long, size for size, especially under heavy pressure and rough usage. Its slipping on wet pavements, especially under a load, is scarcely noticeable. On macadam little, if any, slipping takes place. Engineers consider wood one of the best materials for transmitting power in either wet or dry places or where it is wet part of the time and dry at other times. Large frictional disk wheels with their working surfaces provided with wood blocks wedged in an iron frame are known to have stood for years of continual running in all kinds of weather, summer and winter. Grit and sand have little effect on the wood surfaces because at the start the sand grains become embedded in the wood, forming a surface practically smooth and almost as hard as metal.

PEUGEOT IDEA OF A MUFFLER

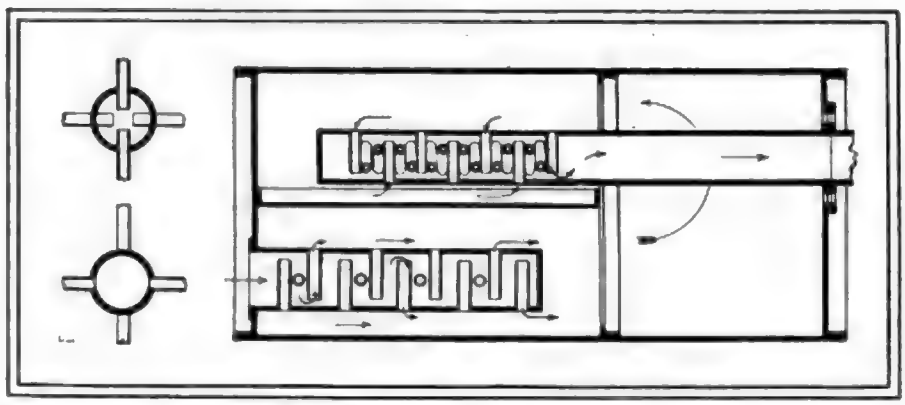
Perhaps the most interesting muffler brought out in Europe during the last 6 months is the Peugeot, now used on these well known French machines and a modification of which is installed on the commercial machines built by the same concern. The muffler is a cylindrical chamber hung lengthwise in the chassis frame, with the gases coming direct from the motor into the lower part of the front end of the chamber. The exhaust pipe from the motor is continued within the muffler in the form of a large-diameter tube closed at its inner end. Within it is a series of little transverse tubes through which the gases escape into the center of the muffler chamber. These cross, or transverse, tubes are arranged as shown in one end of the illustration, being so arranged that all of the gases must pass through them when part of the heat is extracted. The gases must leave the muffler through another pipe in the opposite end. This pipe, like the one through which the exhaust enters, is enclosed at its inner end and contains a series of cross pipes within it, through which the gases from within the muffler have to pass before getting to the atmosphere. These pipes are arranged, as shown in the cross illustration at the upper left, the gases entering the ends which register, with numerous perforations in the pipe, and passing through them into the common center of the pipe. The object of the cross pipes in both the pipe conducting the gases to the muffler and in that conducting them out is that the walls of the short transverse tubes will extract a great deal of the heat out of the gases thereby contracting them. The inlet and exit pipes are separated by a partition in the muffler casing so that in passing from one pipe to the other gases must go through the large chamber.

METAL-TREAD HERAULT TIRE

The Herault pneumatic tire, a recent French invention manufactured at 120 boulevard Magenta, Paris, is made with a metal tread permanently united with the tire casing. In the latter the ordinary rubber and canvas is made use of; the interior part being layers of canvas separated by slight thicknesses of rubber and on the exterior are several thicknesses of rubber. On the tread is a heavy leather strip encircling the tire and on the center of the leather strip is a double series of metal blocks, alternate blocks being almost square and not equal in width to one-third of the tire tread. The others are slightly oblong in shape and of the same width. Each metal block is rounded at the front and rear edges but straight at either side, so that no roughness is occasioned by straight edges hitting rough places on the road and having the sides straight prevents slide slipping, the straight edges producing greater friction with the road surfaces. Each metal block is retained by a central rivet in case of the square ones and by two rivets in the oblong ones. These rivets pass through the metal in the block, through the leather strip, securing it in place, and through all the thicknesses in the outer tire casing, binding all tightly together. As a protection for the air chamber, the heads of the rivets are covered with a strip of rubber on the inside of the casing. This strip is vulcanized or cemented in place after the rivets are fastened. As can be noted in the vertical section of the tread, the metal blocks are sunk into the leather strip in the tread, the leather being cut out to assist in the process. In the black shaded part of the tire casing the rivets are slightly thickened so that in case the head becomes worn off the rivet will not become loose.



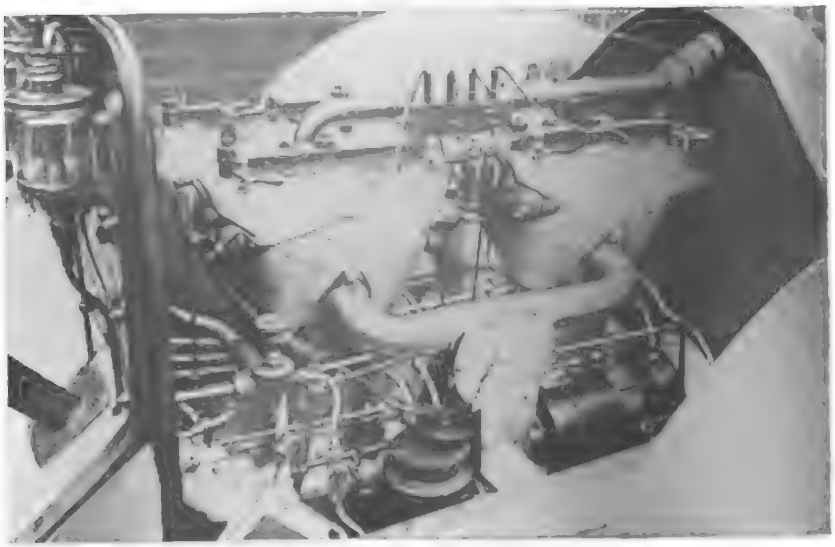
AMERICAN COMPANY'S WOOD TIRE



MUFFLER USED ON THE PEUGEOT MACHINES, MADE IN FRANCE

Digitized by Google

NEW 70-HORSEPOWER MERCEDES



THE 1906 MERCEDES MOTOR, SHOWING CARBURETER, MAGNETO AND GOVERNOR

MERCEDES automobiles for next year possess many new features, most noticeable being the decided changes in the four-speed sliding gear transmission, the carbureter with four spraying nozzles instead of one, the adoption of four brakes, two of which are water cooled, and in the attachment of the springs to the axles by a special spring, box through which the leaves of the spring pass and which is held to the axle by a single bolt passing vertically through the center of the axle. Among the retained features of construction are the scroll design of clutch, make-and-break ignition with magneto current, governor, hand and pedal control of throttle and spark timing lever on the steering wheel. Single lever control of the four forward speeds and the reverse is in keeping with modern practice.

The side pieces of the pressed steel frame are long and the well known Mercedes long curved spring hangers, permitting of the use of long semi-elliptic springs, are in evidence. All cross braces act not only as ties but supports for the gear case and steering column, those in front being the motor arms. A trough-like metal apron encloses the machinery plant from the starting crank to the rear of the transmission case, practically all of the bottom part of the chassis being an apron. The wheel base approximates 11 feet 1½ inches. The rear wheels, a little over 36 inches in diameter, are a fraction of an inch larger than the front wheels and are fitted with 5-inch tires, while 4-inch ones are used on the latter.

The 70-horsepower motor substitutes the 60-horsepower and follows Mercedes lines, with the valves mechanically operated, the inlets being in ports on the right and the exhausts on the left. A marked simplicity is given the induction and exhaust pipings, a single Y piping made integral with the mixing chamber in the carbureter serving to conduct the mixture to the two pairs of cylinders. In the exhaust a straight integral piping connects through a single opening in each pair of cylinders and at the rear of the motor elbows down and couples with a flexible tubing coupling to the muffler. A novel appearance is given each pair of cylinders by a distinctive taper to the bottom of the valve ports. The make-and-break igniters are hung practically in the same place, on the corners of the valve ports, but are a little more compact than in this year's machine. Almost above them in the valve port casting are little inspection cocks, easily removable, by which the points of the igniters within can easily be cleaned. Directly above the pistons in the cylinder heads are other inspection cocks, through which paraffin can be introduced for cleaning the pistons. The magneto is carried in the usual place and is driven by a separate shaft, connected by gears with the inlet camshaft.

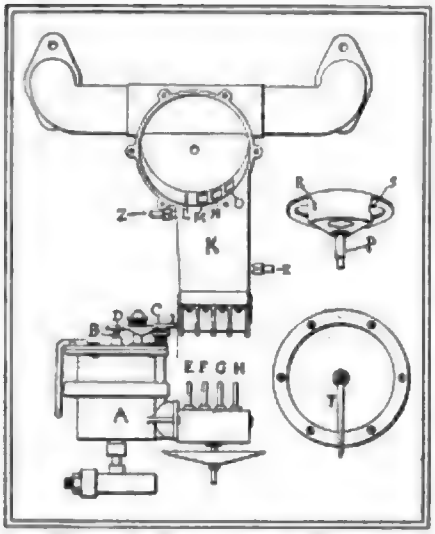
Driven off the inlet camshaft is the gear carrying the centrifugal water pump and fitted in connection with the exhaust camshaft is a half compression device used in cranking and which can be brought into play by a little handle in front of the radiator. The action of the half compression device consists in lifting the exhaust valves off their seatings on the first part of the compression stroke. The motor governor, of the centrifugal type, lies between the magneto and the spur wheel which drives them. It is not enclosed and the sliding sleeve is simply connected with the throttle valve. It is set to normally close the throttle as speed increases, but the throttle can be opened to any extent by hand or foot when desired, in the former case by a thumb lever on the steering wheel, and in the latter by an accelerator located on the footboard.

For lubrication a twelve-feed sight lubricator, occupying the center of the dash, and to the right a single plunger pump for forcing oil into the crankcase, are used. Oil is fed into the lubricator by pressure from a large tank on the left side of the chassis and a center stop cocks controls the oil passage. Of the twelve feeds, the majority pass to the motor, each motor bearing being furnished with a separate lead. Another runs to the steering gear. On the left of the dash is a separate oiler connected solely with the water pump bearings. In the view of the chassis, in which the dash and its parts are shown, can be seen on the left a thumb lever for turning the water onto the brakes on the gear box. In some models a push button in the footboard has served in this capacity.

Nothing in connection with the 1906 Mercedes is more noticeable than the new carburetor, a device bristling with novelties, but one that has been found capable of supplying suitable mixtures for all the varying motor speeds. The float chamber A is supplied with fuel through a needle valve B in the bottom of the chamber, but the passage of the fuel out of the float chamber is also controlled by a second needle valve C, which shuts off the flow to the four spraying nozzles E, F, G and H. On top of the needle valve C is the cam disk D, which is connected with a lever on the dash so that the flow of gasoline to the nozzles can be shut off by the driver. The four nozzles are vertical pipes connected to a common horizontal fuel tube and closed at the upper ends, the fuel passing out through radial holes, there being two very small holes in the nozzle E, two larger holes in F and G and four larger holes in H. The mixing chamber K is a part of the induction pipes, and in the illustration is shown considerably above the four nozzles in order that its construction may be more closely observed. It is divided vertically into four distinct compartments. One is for the passage of the mixture from each of the four spraying nozzles and in the top are the four exit passages, L, M, N and O, which are under the control of the throttle P, removed to show its construction, so that the mixture can be taken from any one or more of the spraying nozzles. The entire chamber is water jacketed, to be heated by pipes connecting at Z with the water system; or the exhaust can be used in heating. The four compartments of the chamber are open to the atmosphere at the bottom, so that the air rushes past

CHASSIS OF 1906 MERCEDES

Digitized by Google



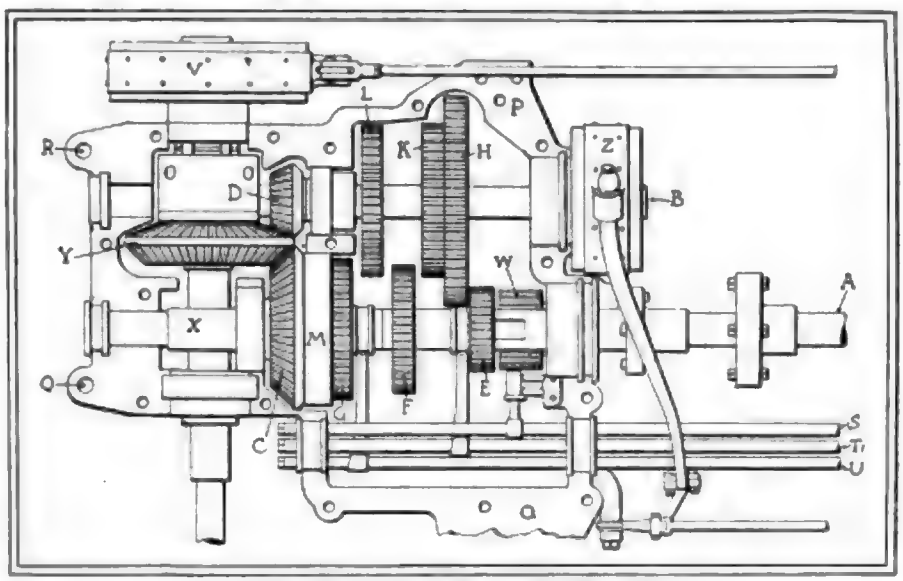
MERCEDES CARBURETER AND PARTS

the nozzles and, mixing with the gasoline, is conducted through the passages in the mixing chamber. The chamber surrounding the nozzle E is restricted, while the chambers enclosing the remaining nozzles are large, so that when E is the only nozzle in operation there is great injection action and sufficient carburation can be gained, even though the air supply to to the motor is limited. With the engine running very lightly the throttle is turned so that the opening R is brought to register with the opening L from the nozzle E before any of the other exits, O, N, or M, are opened, and in this position delicate changes of motor speed can be gained by slightly varying the size of the exit from the passage L. When more power is needed from the engine the throttle is brought into play and is moved further, so that the V-shaped opening S gradually commences to uncover the exit O, thereby bringing the nozzle H into operation. But just as the exit O is brought into use the throttle commences closing the exit L, thereby shutting off the nozzle E. A further movement of the throttle opens completely the exit O and then commences to open the exit N, bringing into service the nozzle G. After this exit is wide open the exit M commences to uncover and the nozzle F is brought into play. In this manner nozzle after nozzle is successively brought into operation until all of the three nozzles, F, G and H, are supplying mixture and the little one E is shut off, whereas at the start, when the motor speed is low, E supplied all the mixture and the others were closed. The throttle is moved through the medium of the arm T, coupled to the axle, on which it revolves. It is also connected with a thumb lever on the steering wheel. The use of an auxiliary air supply valve is eliminated by the four nozzles and the special throttle. Gasoline is carried in a large tank beneath the rear part of the chassis frame, with pressure used for feeding to the carbureter. A little improvement is introduced in having the filling pipe to the tank extended back so that fuel may be poured into it without the body of the vehicle interfering.

Transmission from the motor is through a four speed transmission and double side chains. Foremost in this transmission system is the large, fan-bladed fly wheel, so made for drawing hot gases from around the motor. Within this is the Mercedes scroll type clutch. This works on the principle of a rope wound several times around a revolving shaft, a slight pulling on the rope causing pronounced braking power on the shaft. It is operated by pedal. A long propeller shaft connects the clutch with the gear box, which is carried well back on the chassis frame, thereby making the driving side chains of medium length. Double universal joints with oiling devices are used on the shaft.

As expected, four forward speeds and a reverse are used in the Mercedes, three sliding units being brought into use. For support, the gear case is carried directly on the side pieces of the main frame through the side brackets O and P, and additional support is given in the rear by bolts at Q and R, uniting the gear box with a frame cross piece. Within the case the universal use of ball bearings is in keeping with Mercedes tendencies, but a startling innovation is discovered in that the main shaft A is supported at the rear end of the case by a bridge X partly spanning the differential shaft, and also in the fact that either of the bevels C or D can drive direct onto the double bevel Y on the spur-gear differential on the differential shaft. On the main shaft A are the two sliding gear units E and F-G, moved respectively through the use of the rods T and U. For the first, second and third speeds gears E, F and G are meshed with the respective gears H, K and L on the counter shaft B and the drive is then through the gear D to the bevel on the differential shaft and by double side chains to the road wheels. For direct drive gear G is meshed with the gear M, which is provided with internal teeth and thereby the drive is direct along the shaft A, through the gear C and through the differential and side chains. On this drive the gears on the shaft B revolve idly with the shaft and the gear D runs idly also in the differential bevel. The three rods U, T and S for getting the changes of speed are worked from a single lever, free to move either backward or forward in the alternate slots in its quadrant. The rod U merely moves the gear G into mesh with M for direct drive and removes it and also meshes G with L for the third forward speed. Rod T moves gears E and F, meshing them respectively with H and K for the first and second forward speeds, and in reversing rod S slides the very wide intermediate gear W, on a separate shaft in the bottom of the case, into common mesh with gear E on the main shaft and gear H on the countershaft, when the drive is through the countershaft and bevel D through the differential bevel and the side chains. The differential shaft in the new machine differs from that in this year's in that the end bearings are long and plain instead of self-retained balls.

In connection with the gear box are two independently operated foot brakes, one shown at V on the left end of the differential shaft, where regular brakes are usually found on double side chain drive cars, and the other on the front end of the countershaft B, which is projected for the occasion. This brake Z, like the other, is kept cool during constant brake application, as necessary when touring in mountainous districts, by a stream of water being directed inside of it, the water when desired being fed from a special water tank on the outside of the chassis frame adjacent to the dash. Both of these brakes are hand adjustable, tools not being necessary, the one on brake Z having a wing nut where the brake applying rod is connected and the one on V having a little hand wheel instead, either of which can be adjusted in a few minutes. The rear hub brakes are lever applied. The cover of the gear case is bolted in place, and has in top two inspection ports, one large one for reaching the sliding units and a smaller rear one for examining the differential and two bevel gears. The floor of the car is readily removable so that the gear case is accessible. The sprockets for double side chains on the ends of the differential shaft are large, being almost equal in size to those on the road wheels. Heavy roller chains are retained but chain coverings of any nature are not used.



FOUR-SPEED TRANSMISSION SET ON 1906 MERCEDES

Digitized by Google

Ford

slower speeds were the rule and the continued morning shower had increased the mud, which never lost a chance to get into the carbureter and cause a stop. Several incidents of this nature occurred and the driver almost lost his patience on one or two occasions as he cleaned the mud off, cranked the motor and started off, only to hit a deeper mudpuddle a few rods further on, when perhaps as good a shower of mud was administered to the uncovered machinery. The error of not inclosing the machinery entirely by a metal apron and thereby excluding all possible mud, grit, stones and other matter, was most apparent, as was the fact that machinery should be placed so as to be as convenient and accessible as possible so that examinations can be made without having to get underneath the machine. In commercial purposes the car must go in the wet and mud as well as in the fine and dry, and it is imperative that the construction of the machine be such that it is best for the worst possible weather.

Expenses of the trip for one of the machines amounted to practically 1 cent per traveled mile. Slightly less than 6 gallons of gasoline were consumed on the round trip and as the cost of it, in this case, was 8½ cents per gallon, the fuel bill amounted to 51 cents. To this must be added 1 quart of cylinder oil, worth about 15 cents, and the grand total is 66 cents for 33 miles out and 33 miles back, or 1 cent per mile. As 3,000 copies were delivered, the cost of delivery per paper amounted to .02 cent per copy, or 2 1-5 cents per 100.

MAXWELL TRUCK THE LATEST

Another name is added to the rapidly growing list of manufacturers of motor trucks in this country. The new comer referred to is the Maxwell-Briscoe Motor Co., of Tarrytown, N. Y., which worked a little surprise on the automobile public at the Vanderbilt cup race on Long Island, when the leading members of the company toured from the factory to the race track in the new truck. The machine is intended for carrying loads from 1½ to 2 tons, and follows in its construction the design of the Maxwell touring car, having a pair of opposed cylinders placed crosswise in front constituting the motor, from which power is transmitted through a multiple disk clutch, sliding gear transmission and central shaft drive to the rear axle. The shaft drive feature is the one part of the transmission scheme that is not standard, as most of the commercial vehicles now used, whether light or heavy, drive by means of single or double chains. The practicability of shaft drive remains to be tested and its working will be followed with interest. It has the advantage, however, of being well suited for muddy weather when grit, mud and stones get on to the driving chains and sprockets and eat up considerable power.

The running gear construction consists of two pressed steel pieces terminating in front and rear with curved spring hangers, to which the respective ends of the four semi-elliptic springs are secured. In the axle construction standard lines are followed, heavy construction affording good strength is the important feature. All four wheels are 32 inches in diameter, but the front ones have 3½-inch tires and on the rear 4-inch ones. Both are of Firestone make with round tread.

Cylinders in the motor have a 5-inch bore and 5-inch stroke and at a crankshaft speed of 1,000 revolutions per minute 18 horsepower is claimed. Mechanical inlet valves are used throughout. A feature in connection with the engine is that any wear occurring on any of the engine bearings can be taken up without removing either the transmission or engine case cover, the adjustment being controlled by screws located in the bottom of the engine case. The engine and transmission case, a combined casting, with the former part in front and the latter centrally behind it, is an aluminum casting in which all the motor and transmission bearings are rigidly secured, making poor alignment of the shafting difficult, a fact worthy of note in commercial machines, where heavy loads and rough usage are apt to strain parts and, if they are carried on different parts of the chassis frame, interfere with their alignment. The entire case is hung on three points. When the interior parts have to be inspected the top of the case can be removed by loosening six bolts, when the part carrying the cam shaft and push rods on the top part of the case comes off and the crankshaft and connecting rods are laid bare. The transmission elements within the combined engine and gear case consist of the multiple disk clutch, which runs in oil and is operated through the medium of a heavy coil spring and a sliding gear set, giving three forward speeds and one reverse, the maximum forward drive being 18 miles per hour. All gears are made from drop forgings, the forgings being first cut out and then case hardened. The changes in speed are gained through one of the side levers at the driver's right. In the transmission plain babbitted bearings are used, but in the crankshaft of the motor bronze, with a shell lining of babbitts, is adopted. A safeguard against gear stripping when changing speeds is added in providing the gears with a suitable lock. Lubrication is attended to through a positively driven sight lubricator. Mixture is ignited by spark plugs in circuit with coil, commutator and either of two sets of dry cells.

Transmission of power from the gear case to the rear wheels by shaft has been decided upon because of the fact that few, in fact no defects are claimed by the company in its style of propeller shaft drive. In the shaft are two universal joints, each with special grease-containing facilities. In the rear axle Hyatt roller bearings are used instead of balls. In other lines the rear axle construction of the Maxwell touring car is used, except in that all of the parts are proportionally strengthened. The side thrust, inherent with bevel gear construction, is taken up by a blank roller of the same size as the driving pinion, this being fitted against the smooth bevel surface of the driving gear, holds the latter up to its work and renders false alignment difficult.

The design of the body part of the truck is little different from many now used. The seat is thrown high above the motor, leaving almost the entire top of the chassis to be used as a carrying platform, the measurements of which platform are 10½ feet in length by 6 feet in width, the extra width being gained by having the cross sills, carrying the platform, project well over the

MAXWELL 18 HORSEPOWER 1½-2 TON TRUCK

REAR VIEW OF TRUCK, SHOWING WIDE PLATFORM

Digitized by Google

DAIMLER STEEL TIRED 13,200-POUND TRAILER, WITH TARPAULIN COVERS

tops of the rear road wheels, as can be noticed in the rear view of the truck. Beneath the dashboard, in fact directly beneath the footboard, is the cellular radiator, with the projection of the crankshaft, for the starting crank projecting through the lower part of it. A dash is eliminated, the little inclined footboard, common on express wagons, being the only body part in front of the driver. The controlling devices are centered around the vertical steering column, the throttle and spark levers being on the column just below the steering wheel; the clutch and brake pedals in the footboard and the change speed and emergency brake levers at the right, the whole design being in conformity with touring car principles. Sides of any desired nature may be used, the stake back and combined stake and running board sides being used on the truck illustrated.

GERMANY HOLDS VAN TRIALS

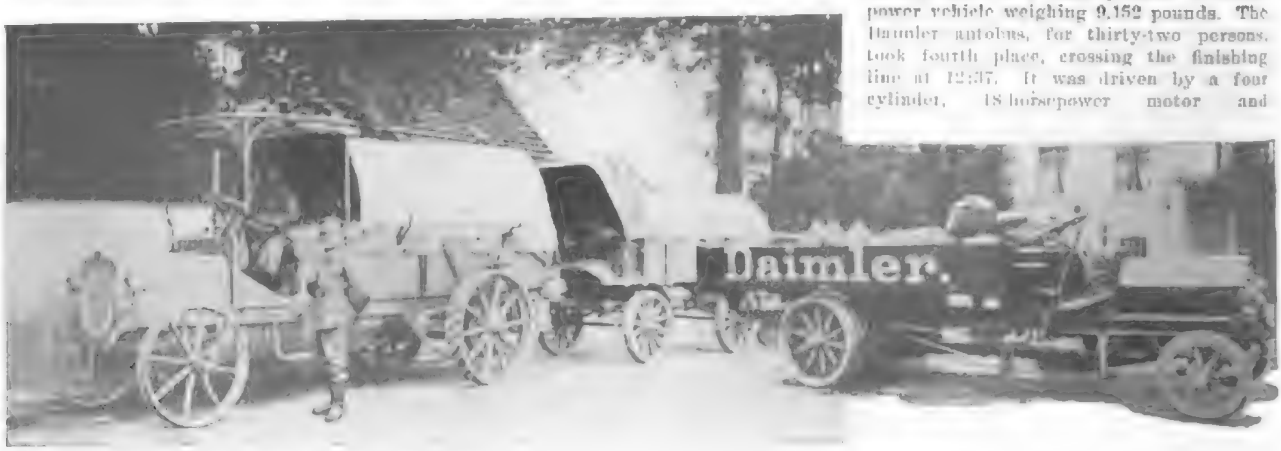
The Automobile Club of Germany conducted trials of heavy and light commercial wagons and passenger buses over the roads in the vicinity of Berlin from October 9 to 14 inclusive. The competing vehicles were divided into different classes according to their load carrying capacity, and two distinct routes were used on each day's tour; one route, averaging 60 miles per day, was for all passenger buses and delivery and merchandise vans carrying loads of less than 6,600 pounds. The second route, of approximatey 41 miles per day, was for trucks and delivery wagons carrying loads of from 6,600 to 13,200 pounds and for trailers transporting at least 6,600 pounds. The roads selected for each route were through sections of the country not well supplied with railroad service, one object of the tests being the hope of impressing upon the population in these places the advantages of the motor wagon for transporting passengers, freight and baggage over horse-drawn methods. The passenger buses carried at least ten passengers—some carried thirty—and they had to have provisions for carrying 55 pounds of baggage for each passenger. In the first 2 days of the trials, of the fourteen cars started two fell out, twelve finishing. Two cars were scratched. The two break downs occurred in the first day's run. One was a beer truck in which the motor was coupled to a running gear that had not been in use since 1898 and the steering gear failed to work, ditching the machine. The other break down occurred to the Daimler 6,600-pound truck.

On the first day the route was from North Berlin to Gransee, the long route being 60 miles and the short one 41¼ miles. The long trip was through Tegel, Schulzendorf, Marwitz, Eichstaedt, Kremmen, Linum, Fehrbellin, Alt Friesach, Herzberg, Lindow to Gransee. The shorter route went through the towns of Blankenfelde, Libenwalde and Zehdenick. The roads throughout are a wide strip of macadam, perfectly dry on that day.

As an evidence of the interest taken in the event, several hundred prominent French, English and Belgian motor students followed the big machines over the course in automobiles, along with the German manufacturers interested in the showing made by their machines entered in the test. The machines comprised several passenger buses with seats for thirteen and thirty passengers and a milk delivery truck capable of carrying 218¾ gallons of milk. The truck is the product of the Daimler firm and is made for use in the provinces where the dairy products for the large cities are collected from the farms and brought to the railway stations. A baggage van for the Daimler concern was also in the list of entries, capable of carrying 1,650 pounds.

Heavy brewery and merchandise trucks also were among the competitors. The Boehmischen brewery wagon, a two-cylinder, 10-horsepower machine, started with the others, but an accident to the steering gear delayed the entry at Forsthaus Sumb long enough to put it out of the running. The first of the machines to cross the finishing line at Gransee was the Verkehrsgesellschaft "Gernsbach," the thirteen-passenger bus from the factory of the Southern Automobile Co., in Gaggenau, which left Berlin at 7:06 in the morning and reached Gransee at 11:39, having covered the 60 miles of the long course in 4 hours and 33 minutes. The car was laden with stone ballast and also carried three persons in addition to the required weight. The average of 13¾ miles per hour is considered exceptionally good for thirteen passengers. The second to finish over the long route was the milk wagon laden with its 1,650 pounds of weight which covered the route in 4 hours and 55 minutes, arriving in Gransee at 12:06 o'clock.

The twenty-seven passenger bus of the Buessing firm got into Gransee at 12:37 and secured third place, having left Berlin at 7:35 o'clock in the morning. The machine is capable of carrying 7,700 pounds and is a four-cylinder 25-horsepower vehicle weighing 9,152 pounds. The Daimler autobus, for thirty-two persons, took fourth place, crossing the finishing line at 12:37. It was driven by a four cylinder, 18 horsepower motor and



N. A. G. 13,200-POUND TRAILER, WITH STEEL TIRES

DAIMLER MILK WAGON FOR PROVINCIAL USE

Digitized by Google

weighs 10,340 pounds. The other cars came in at short intervals, the Daimler car, with a trailer carrying 13,200 pounds, arrived after having covered the short 41-mile course in 5 hours and 17 minutes.

Out of the fourteen cars which started twelve finished. The two which did not get away were the Rosenthal and the Garrett & Smith Co.'s steam truck of 25-horsepower with a two cylinder motor; coke was used for fuel in this machine. The two which started, but did not finish, were the Boehmischen beer truck, before mentioned, and the new Daimler truck for carrying 6,600 pounds weight, which broke down at Herzberg.

The mayor and aldermen of Gransee were out to receive the incoming tourists and a banquet was given to the principals. In the afternoon the townspeople visited the yard where the big machines were stored after the long trip.

Following is the list of cars and the order in which they finished:

Car	Left Berlin	Distance, miles	Arrived at Gransee
5. Daimler 13-passenger bus	7:00	60	11:30
3. Daimler 218 gallon milk wagon	7:11	60	12:06
1. Buessing 27-passenger bus	7:35	60	12:37
2. Daimler 32-passenger bus	7:04	60	12:40
10. Daimler 13-200-pound trailer	7:27	41	12:44
8. N. A. G. 3-300-pound milk wagon	7:15	60	1:18
15. Truck with trailer, N. A. G. trailer	7:25	41	1:28
12. Daimler 13-200-pound truck	7:23	41	1:29
9. N. A. G. 7-700-pound truck	7:18	41	1:37
14. Continental 6,000-pound truck	7:19	60	2:11
6. Daimler 7,700-pound delivery	7:12	41	2:31
4. N. A. G. 1,600-pound delivery	7:00	60	2:42

The second day's journey from Gransee to Neubrandenburg, a distance of 78⅓ miles, lay through a beautiful farming region and the roads, wet from recent showers, were in excellent condition for the test. As on the first day's stage, the Daimler omnibus for thirteen passengers finished first, covering the distance in 4 hours and 56 minutes at an average speed of 15½ miles to the hour. Number 7, which broke down at Herzberg on the first day reached Neubrandenburg at 10:30 o'clock Tuesday evening. The order in which the cars finished the second day's run was as follows:

Car No.	Left Grandsee	Distance miles	Arrived at Neubrandenburg
3	7:28	70	12:24
16	7:42	43	1:31
15	7:43	43	1:51
2	7:29	70	2:20
12	7:33	43	2:21
5	7:39	70	2:47
1	7:25	70	2:49
9	7:41	43	2:52
4	7:47	43	3:15
10	7:31	70	3:55
8	7:52	70	4:00
6	7:30	43	4:26

LAUNDRYMAN EXPERIMENTS

E. V. Johnston, proprietor of the Domestic laundry, located at 119-121 South Main street, Wichita, Kan., and a very matter-of-fact experimenter with the motor car for use in delivery work in small places, writes as follows to MOTOR AGE regarding the experiences he has had with a commercial wagon in delivering laundry in and around his city.

"I hardly know if I am entitled to the credit of running an automobile delivery wagon. I have a light touring car, and, being very much interested in the question of delivery service with an automobile, had built for it a body which I could attach by removing the tonneau, believing that I could experiment with this without too much expense, and form a pretty good idea of the possibilities of the service for this city. We have comparatively a small amount of paving in Wichita, but on the other hand the nature of the soil is such that the ordinary road can be used practically all the time. The distances are not long between stops for delivery, the population being about 35,000; no wagon exceeds 3 miles from the plant. I have been covering the town with three wagons, using five horses, so that I could rest two at a time. I planned to use the automobile part of the time on each route, on the theory that it would enable me to save the two extra horses, and for a starter that was all I attempted, except that I used it for hurry calls, especially if they were at a long distance. It has not resulted in any saving to date. Being an experiment only, I was compelled to run the machine myself or send a man along, as I did not consider it advisable to turn it over to the regular drivers. I found that I could cover a route in about one-half to two-thirds the time previously consumed. I have not kept any accurate data of time or miles covered, except in one case out of curiosity, when I made a route covering 13 miles, delivering forty-two bundles, in 2 hours 5 minutes. As it was necessary to stop and collect for the bundles, of course, a large amount of the time was spent in this way, but I did not keep a record of the exact time thus spent.

"From my observation, I consider it a valuable auxiliary wagon, but, in a town of this size, do not believe it can be used to advantage in the place of a regular wagon at all times. I think it would well pay anyone having a touring car to fit it up as I have, and it is quite possible it might do to put on a regular car, but the original expense would be pretty heavy for the amount of service it would give, unless it would be found practical to entirely dispense with some of the horse wagons. The advertisement afforded by such service is worth a great deal in a small town, and such experiments are well worth considering by others located as I am."

JOHNSTON'S LAUNDRY DELIVERY WAGON, USED IN WICHITA

PITTSBURGER'S TO MAKE CARS

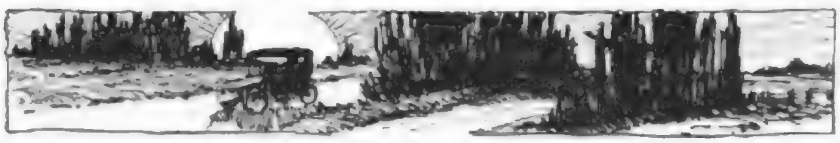
Great interest is being taken in Pittsburg automobile vehicle circles in the light electric delivery car which the Pittsburgh Motor Vehicle Co. is just starting to manufacture. The company last week received a permit for the erection of a factory in Summerlea street, East End, and next spring it expects to erect a plant that will employ fifty men and where several cars can be turned out every week. The car which it will push hardest weighs 1,000 and 1,500 pounds. It was designed by D. L. Brown, manager of the electric department of the Standard Automobile Co. Those who have watched it in operation claim for it that it reduces the percentage of dead load to a minimum and greatly increases the proportion of live load. The parts are purchased direct from the supply houses and assembled at the factory in Pittsburg.

SHOW GOOD MILEAGE

The Park Auto Co., of Pittsburg, which was organized in July with a capital of $20,000 to give Pittsburg's exposition visitors and others an opportunity of seeing the parks and manufactories of Greater Pittsburg, reports through its president, M. J. Dain, that its two cars have traveled over 1,500 miles this season. They will be kept in regular service until November 15.

Digitized by Google

SHORT STORIES OF TOURING



H. G. Bemis, of Los Angeles, Cal., who, with his wife, is on a 3 months' tour in an automobile weighted down with luggage, even to a stove and trunk, has left San Francisco on his trip further north, the southern motorist expecting to journey as far as Portland. In speaking of the pleasures to be had on a trip of this kind, Mr. Bemis said: "We are having a fine time of it every day, and often stop for a few days at places where there is any pleasure to be had. There have been no particular excitements with us, not even so much as getting stuck on the road or a breakdown. It is just a case of going any place we want to, and we don't have to walk, either. We have had an abundance of small game and trout, and will soon be looking for big game. The worst piece of road we have yet struck was about 40 miles south of Stockton, near Turlock, and there we encountered about the worst 4-mile stretch of sand I have ever seen in all my motoring career."

At Madera, Mr. Bemis left the machine and went in a team to Merced by way of Raymond and Big Oak Flats, and then back to Madera by rail, being unwilling to pay the $50 toll asked to enter the pass. "We could have made this trip with the car without trouble," remarked Mr. Bemis, "but the roads are narrow, and there is danger of frightening teams, so a heavy toll is imposed. It has the effect to make motorists go in wagons or by rail if they wish to go at all. We spent considerable time in the valley. The trip through mountains and forests was very beautiful, especially through the Big Tree groves."

IDEA FOR TOURISTS

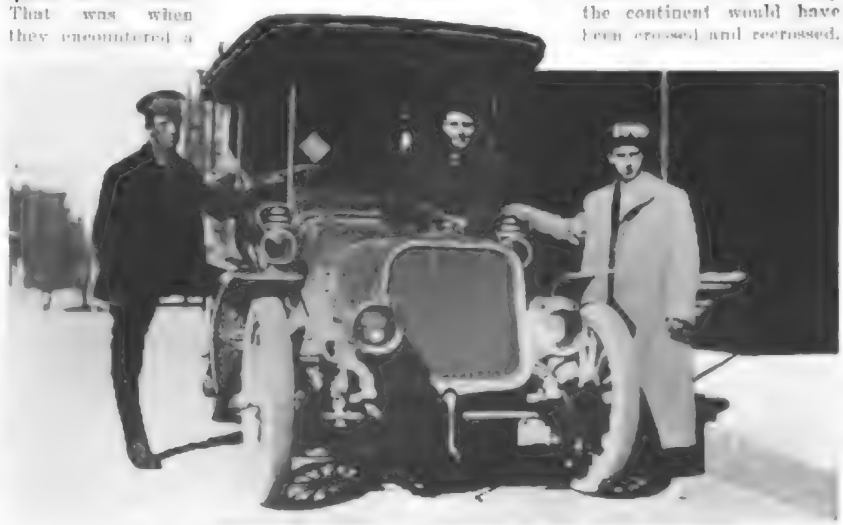
Tourists who travel in pairs and are satisfied with one seat will be interested in learning the way R. L. Jefferson, F. R. G. S., a famous transcontinental tourist who is now en route from London to Constantinople, has fitted up his 8-horsepower Rover. The most noticeable thing about the machine is the body, which resembles a deep, oblong box or rather a tonneau with no door and no back seats. This in reality makes a runabout out of a touring car, with the space usually occupied by the rear seats used for packing baggage. The front seats can be lifted bodily out of the car. Under them are carried the tools, lubricating oil and repair outfit. In the deep space behind the seats all the heavy spare parts are carefully stowed upon the floor. Each part is either screwed to the floor or made to fit into a neat wooden frame which is fixed to the floor. The small things are all done up in bags numbered, and a list is carried, so that any part can be located by reference to the list. On the top of these a detachable lid is laid, and upon this lid the personal luggage of the two occupants of the car is carried, and on each side there is a spare non-slipping Dunlop cover. Over the whole a fitted waterproof cover is secured, while last, but not least, there is a Cape cart hood, which comes right up, and completely envelops the luggage and the occupants of the car, and is continued well forward, so that they and the car and its contents generally are entirely sheltered from the weather. Everything has been carefully thought out, and no better instance of this is found than in the maps which Mr. Jefferson has prepared for his journey. These are carried in a small wooden box on the side of the car, and the maps selected are those of the Austrian military survey. Each day's drive is cut out and mounted on stiff card and numbered from 1 onwards, so that all the driver has to do is to take, say, No. 1, drive over the route it shows, and put it at the back of his map box. He then finds No. 2 to his hand for the second day's drive, and so on.

FAST TOUR ACROSS COUNTRY

One of the most remarkable automobile trips ever undertaken by one or more Lexingtonians was completed Monday by the arrival at the Kentucky city of William T. Muir, Sydney A. Hughes and Sherman Leigh, who left there 2 weeks previous on a record breaking trip to New York, carrying with it a good sized wager with the well known Lexington turfman, John W. May, that the run to the metropolis could not be made, barring accidents, in 4 days and nights. When the wager was made May little dreamed of Muir's ability as a driver in the Blue Grass state, and it was not until after the automobile party had reached New York the following Saturday morning that he was thoroughly convinced that Muir had really undertaken the trip. The trip to New York was remarkable in several respects. First the machine was run both day and night during almost the entire trip, as only once did the party seek the quiet of a hotel. That was when they encountered a rain storm, which delayed them for about 6 hours. During the remainder of the trip Muir sate at the wheel for 18 hours, while Leigh and Hughes propelled it for 6 hours in order to allow Muir to get a little rest. The only time the party left the machine on the trip to New York was at Cleveland, where they encountered rain and it was then that the most exciting period of the trip occurred. The tourists retired to their rooms in the hotel at midnight and left orders to be called at 4 o'clock in the morning if the rain had stopped, and when it was seen by the clerk of the hotel that it was possible for the party to proceed efforts were made to arouse the slumberers. While Messrs. Hughes and Leigh answered the first call and hurriedly dressed, it took the combined efforts of those two and several bell boys at the hotel to get Muir thoroughly awakened and dressed, he being so completely exhausted from the nerve-racking venture he had undertaken. Immediately upon arriving in New York Muir and his party at once made affidavits to the effect that they had made the entire journey in the machine in which they left Lexington, and this matter being attended to, they witnessed the Vanderbilt cup race that afternoon, and that night started back to Lexington. The return trip was taken by easy stages, the party stopping off at several points of interest enroute. Two days were spent at the plant of the Pope Mfg. Co. at Toledo, where several minor repairs were made on the car. The trip to New York was made via Cincinnati, Dayton, Columbus, Cleveland, Buffalo, Rochester, Syracuse, Albany and thence down the Hudson to New York.

DEAD BROKE TOUR ENDS

E. F. Simmons, wife and two children, of Syracuse, N. Y., started out from New York city the latter part of June to cross the continent in an automobile, starting without a cent in their pockets. They have returned home after making between 3,000 and 4,000 miles, being compelled to abandon the journey on account of the illness of Mrs. Simmons. Had she not been unable to stand the trip the continent would have been crossed and recrossed.



W. T. Muir's Pope-Toledo, Which Made a Fast Run to New York

Digitized by Google

MOTORING IN CHICAGO PARKS

Pair to Draw To—Italy's royal pair, King Victor Emanuel and Queen Margherita, are enthusiastic motorists, both of them using Fiats. The queen is much given to touring, while the king finds much enjoyment in handling the wheel himself.

Ormond Officials—Secretary Dai H. Lewis of the Automobile club of Buffalo, who was assistant to W. J. Morgan at the Ormond Beach races last winter, has been informed that he has been selected as clerk of the course for the Ormond events this season. Fred J. Wagner will be starter.

Progressive College—Professor R. E. Trask, of Denison university, who has charge of the engineering department in that school, called last week at the office of the state commissioner of highways, at Columbus, O., and secured copies of all the bulletins that have so far been issued, and stated that he was about to have the scientific study of roadmaking taken up as a requirement for the completion of the engineering course.

Road Boom In Ohio—Governor Myron T. Herrick, of Ohio, has issued a proclamation, as requested by the National Good Roads Association, asking mayors, county commissioners, boards of trade, chambers of commerce and labor organizations to send delegates to the state convention at Columbus on the 18th and 19th. Especial interest is being manifested by the organization at Lima in the contest for president. It is expected that there will be 100 strong of this branch at the state meeting to boom Davis J. Cable, a prominent attorney, for the presidency.

Collect $3,000 In Fines—Justice Wood, of Ogontz, Pa., on the Old York Road, has already this season imposed fines of over $1,000 and nearly $300 in costs on automobilists who have violated the town's speed ordinances, and, besides, has nearly a score or more to hear from. Justice Walker, at Jenkintown, a mile or so above Ogontz, has disposed of nearly 100 cases since Decoration day; Justice Haines, of Cheltenham, has been almost as busy, while Justice Luff, at Weldon, on the Germantown Willow Grove pike, who started in on July 4, has also a good sized list. Altogether the Montgomery county treasury has been enriched from automobilists' fines to the extent of $3,000 or more. The bulk of this money is not lost to the automobiling public, for by a wise provision the residue, after paying costs to justices and constables, is devoted to the improvement of the county's roads.

In Chicago's Parks—Windy city motorists have had plenty of chances to enjoy the Indian summer and Chicago's parks and boulevards have been thronged with cars of late. Cameras have been used and one of them snapped a boulevard scene in which an Autocar runabout figured prominently.

Good Work—The Cleveland Y. M. C. A. will have an automobile course in its educational course, starting November 1. This is not new, as this has been in vogue for 2 years, but the new course just announced will be much more complete than heretofore. Last year the course consisted of lectures, this year the practical side of the work will be taken up. Factories will be visited and machines will be taken apart and explained. About 100 have already enrolled for the class.

Washington's First Run—The quaint and historical old town of Frederick, county seat of Frederick county, Maryland, emblazoned on the tablet of fame by the poet Whittier in his poem on the Barbara Freitchie flag incident, said to have transpired during General Stonewall Jackson's triumphant march through that ancient town during the days of the civil war, was the objective point of the initial run of the Automobile Club of Washington on October 19. While only ten cars participated in the run, because of the threatening weather, the enthusiasts who braved the elements were more than repaid for their defiance of old Jupiter Pluvius.

HOME OF AUTOMOBILE CLUB OF WASHINGTON

Hustler for Highway Commissioner—Sam Huston, state commissioner of highways in Ohio, will visit a number of counties in that state this week to secure samples of materials for roadmaking, and will have the materials tested at the laboratory of the Ohio state university, at Columbus.

Farmers Stop Scorcher—Farmers engaged in repairing the highway near Delaware, O., recently took effective steps to stop a scorching motorist who scared their horses and then kept on. The rustics first showered the fleeing car with rocks and then telephoned ahead to another gang of road-menders several miles down the road. When the scorcher arrived at this point he found further progress barred by a string of heavy dirt wagons lined up across the road. He then stopped and paid the damages demanded by the irate farmers.

Red Tape Routed—The misconduct of a chauffeur of one of the government automobiles used by one of the executive departments for delivery purposes was the direct means of bringing about an amendment of the civil service rules. The chauffeur in question repeatedly drove his car directly in the way of the president's carriage and seemed to take delight in cutting him out of the road. When President Roosevelt learned who the chauffeur was he said he ought to be discharged as incapable of operating the automobile. The subject was pressed by members of the cabinet, and the decision was reached to make the amendment to the civil service rules, in order that misconduct of a government employe might be made the cause of instant dismissal. It has thus remained for a chauffeur to cause a sweeping and comprehensive change in the civil service rules, whereby inefficient government employes can be weeded out and their places filled by competent employes. Heretofore such a thing was impossible owing to the construction placed upon the rules.

To Change Motor Cycle Rules—A rumor has gained currency in England to the effect that the committee of the Auto Cycle Club has decided not to enter for the international motor cycle cup race next year. This is declared to be quite inaccurate, as no decision has yet been arrived at. The club has, however, sounded the other countries on the possibility of confining the race to a more useful type of machine, and the Austrian club is apparently of the same opinion, for it has asked the Auto Cycle Club for its support to one of two proposals which will be laid before the next congress in Paris in December. The alternative proposals of the Austrian club are: That each machine should be weighed without tires, the rest of the machine without oil, water, gasoline, or batteries not to exceed 101 pounds and that only the motor and ignition apparatus be subject to a maximum weight. The first proposal would encourage the use of heavier tires and prevent the use of light tires in order to make up for an unduly heavy machine.

Digitized by Google

The second proposal would encourage by not penalizing the use of frame, wheels, saddle, tires and parts of all suitable weight.

Seek Park Rights—Philadelphia automobilists are endeavoring to induce the Fairmount park commissioners to open the romantic Wissahickon drive to them. Owing to the narrowness of the roadway this beautiful road has been forbidden ground for motor cars. The success of the movement seems assured.

Orioles Name Officers—At the annual election of the officers of the Automobile club of Maryland took place W. S. Belding was reelected president; R. J. Leupold, vice-president; George S. Dickey, secretary, and Ernest J. Knabe, Jr., treasurer. An effort will be made during the coming season to obtain more favorable legislation for automobilists.

Want Sign Boards—A committee of the Automobile Club of Pittsburg, headed by James Francis Burke, attorney for the club, has requested the commissioners of Allegheny county to erect sign boards at all points of intersection of the various county roads. These roads are the pike roads which are directly under the control of the county commissioners and of which dozens of miles have been made the past year. It was pointed out by the committee that signs are needed more on these roads than on the city streets, inasmuch as so many persons now travel long distances in automobiles who are unfamiliar with the roads. It is likely that the commissioners will take action on the report in the very near future.

ITALY'S ROYALTY—KING VICTOR EMANUEL AND QUEEN MARGHERITA—TOURING IN FIATS

French Inquiry—The committee appointed by the French government to consider what changes, if any, are desirable in present regulations as to motoring will discuss the following points: Should an age limit be insisted upon for authorized drivers? Should a motorist or driver who applies for a permit to drive be called upon to produce evidence of good character? A new system of numbering motor cars. Whether or not every car should carry a speed indicator. The members of the committee are all officials.

Ohio's Governor Stopped—Governor Herrick of Ohio was one of the recent victims of the bicycle police delegated to bring in every one who exceeds 15 miles an hour. The governor was held up in an outlying district and it was only after protestations that the speedometer showed 15 miles an hour and no more, that he was released by the police, despite his official position.

BRIEF BUSINESS ANNOUNCEMENTS

Cleveland, O.—Work on the new factory building for the Peerless Motor Car Co. is progressing rapidly.

Elkhart, Ind.—John S. Landon, although only in his present place 2 months, is contemplating building a new garage in the spring.

New York City—Gross & Gross Co. leased for John A. Tallman to an automobile company the ground floor of 308-310 West Fifty-ninth street, for a term of years.

Goshen, Ind.—The Goshen Auto and Supply Co. is located in a building 25 by 100 feet, and is going to put on an addition of 50 feet, in which will be placed a complete repair shop.

New York City—Louis Mansuy, well known in the carriage and rubber tire trade, has joined forces with the Fiske Rubber Co. and will assist Manager J. W. Bowman at the New York branch.

Detroit, Mich.—The Detroit Auto Specialty Co., recently incorporated with a capital stock of $3,500, has taken over the business of John A. Wilson and Joseph L. Manniere at 12-14 Sherman street. The company manufactures metal automobile specialties.

Bridgeport, Conn.—A new factory garage is to be erected for the Locomobile company at Seaside Park. The garage is to be used for the storage of cars previous to delivery, and the regular garage will be used for cars owned locally, and for completed cars.

Baltimore, Md.—M. Gillett Gill has taken out a permit to build a $40,000 garage at Maryland and Mount Royal avenues.

St. Louis, Mo.—Amadee V. Reyburn, Jr., has purchased a lot on Delmar avenue west of King's highway, on which he intends building a $35,000 garage.

Austin, Tex.—S. B. Radkey has leased the John Phillips store on West Fifth street, and in addition to his carriage factory, will engage in the automobile repair business.

West Orange, N. J.—Options have been obtained on 65 acres of land on top of the Orange mountains by T. Phillips White, of New York, who proposes to erect a garage and hotel. There will also be twenty cottages, a stable and a riding track.

Pittsburg, Pa.—Architect J. E. Obitz has plans for a garage to be erected on 50 by 115 feet on Broad street, near Euclid avenue, East End. The building will be owned and occupied by the Central Automobile Co., composed of E. G. Mooney, the real estate operator, and Edward Seely, his son-in-law.

Bucyrus, O. George and Volney Rosina will open a new garage the first of the month in a new fireproof building which is about completed. The building is 80 feet long and 35 feet wide and is constructed of cement blocks. For a year George Volney traveled for the Reo and Cadillac people.

Bellefontaine, O.—It is reported that the Zent Automobile Co., of Bellefontaine, O., will be removed to either DeGraff or Lancaster.

Sandusky, O.—George Daniels and Paul Swessinger have purchased ground on which will be erected a new building for an automobile garage.

Providence, R. I.—The Rhode Island Motor Car Co., 69-71 Broad street, will handle the Thomas Flyer in Rhode Island for 1906, C. S. Henshaw having closed for the car last week.

Buffalo, N. Y.—The Kane-Chamberlain Co., recently incorporated, will build carriages and automobiles. It is building a plant 57 by 100 feet, two stories high, at Tupper and Ellicott streets, at a cost of $25,000. It is in the market for a good line of cars.

Albany, N. Y.—C. Sutherland Ransom is at the head of a new garage company which will build at the corner of Pine and Chapel streets. The plant will cost $50,000. No name has been selected for the company as yet, but it will probably be the Albany Garage Co.

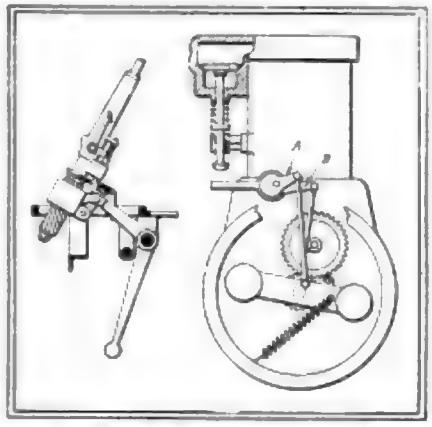
St. Louis, Mo.—The Mercantile Trust Co. has closed the sale of a tract of land on Delmar avenue. The lot has been purchased by Amadee V. Reyburn, jr., who will erect an automobile garage on the site. The building is to cost $35,000, and will have every conveniences and appliance for the sale and maintenance of automobiles.

Digitized by Google

Current Automobile Patents

LETTERS PATENT No. 801,291, dated October 17; to Gottlieb Honold, of Stuttgart, Germany—The ignition device consists of a revoluble armature with two separate windings. One winding connects from a battery and has a condenser in circuit. The other winding has an induced current from the first winding and is in circuit with the two electrodes of the spark plug. Means are provided for operating synchronously the opening and closing of the short circuit and the movement of the armature. The timing of the spark is obtained in the usual way.

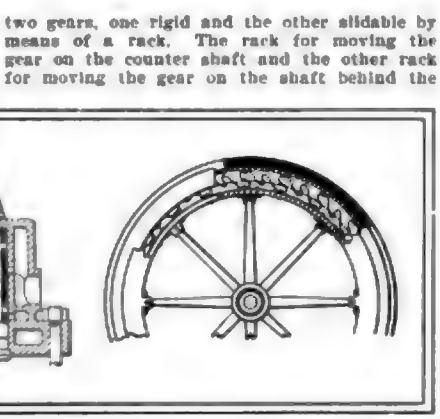
Letters patent No. 802,038, dated October 17; to Franklin W. Hagar, of Nashville, Tenn.—The inventor's carbureter has the float A in a separate chamber and the gasoline passage leading therefrom to the spraying nozzle passes up a heavy central tube in the center of the mixing chamber. The entrance of air into the mixing chamber through C is under control of the valve E, ordinarily held on its seat by a spring which surrounds the gasoline passage to the nozzle. The top of the mixing chamber is a cap screwing in place and has hanging downward from it a circular part F, reaching below the spraying nozzle, which is within it. This hanging part is perforated and the space surrounding it communicates with the motor. Air entering by motor suction raises the valve E and enters the chamber surrounding the nozzle, mixes with the gasoline, then passing out through the perforations in F, passes to the motor through the opening B.



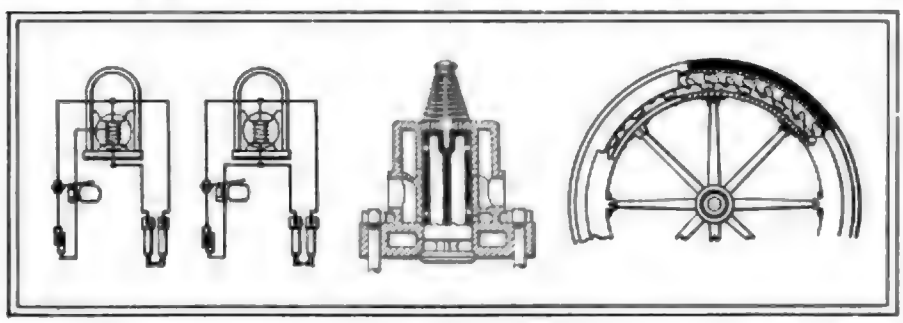
LAW'S STEERING GEAR

Letters patent No. 802,125, dated October 17; to Ernest R. E. Uhlin McDonald, of MacDonald, Pa.—The invention is a form of valve casing for use on gasoline motors in which the valve and one casing will do for the exhaust and intake of one motor. The casing has a cylindrical chamber communicating with the interior of the cylinder, and the valve controlling the entrance between the casing and the cylinder. In the casing above the valve are two ports, one for the intake mixture and the other for the exhaust, and the valve casing is made to register with these ports one at a time so that in one movement a mixture is taken in and the exhaust port is covered and again the intake passage is covered and the exhaust opened. One casing answers for a cylinder, or might be made to do for the four valves in a pair of cylinders formed by a single casting.

Letters patent No. 802,282, dated October 17; to Fred A. Gerling, of Portland, Ore.—The inventor, in his automobile, has the motor placed near the back axle so that he can drive without the use of side chains or a propeller shaft. The crank shaft carries small pinions on either end, which mesh constantly with large gears on the end of a cross shaft behind and parellel with the crank shaft. On this latter shaft are two gears, one rigid with the shaft and the other slidable longitudinally by means of a rack. Between the crank shaft and the one behind it is a counter shaft carrying two gears, one rigid and the other slidable by means of a rack. The rack for moving the gear on the counter shaft and the other rack for moving the gear on the shaft behind the counter shaft are connected by a gearing so that when one rack is moved to the right the other goes to the left and vice versa. The sliding pinion on the counter shaft is very long and can be made to mesh with either of the gears on the shaft in the rear of the counter shaft and at the same time is in mesh with a large gear on the rear axle, or if desirable on a differential counter shaft from which a double chain drive can be used. The transmission gives two forward speeds and a reverse, gained through a single lever.



RITE'S MOTOR



HONOLD'S IGNITER

McDONALD'S VALVE

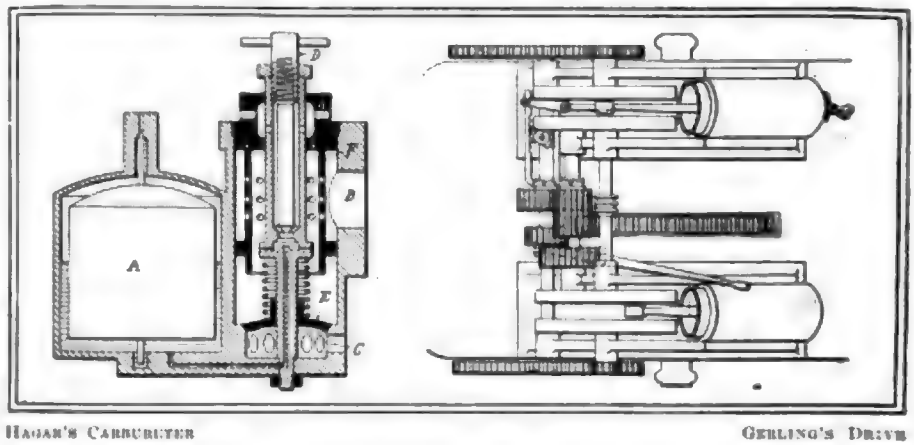
COUSEN'S WHEEL

Letters patent No. 802,356, dated October 17; to Fred A. Law, of Hartford, Conn.—The inventor's steering gear consists in a hinged steering pillar. On the lower end of the pillar is a quick pitch thread and surrounding the pillar on the threaded part is a traverse nut adapted to be moved up and down the steering pillar over the threaded part when the pillar is turned to the right or left. Just behind the support of the pillar is a cross shaft on which is pivoted a bell crank piece, the depending, or downward projecting part being the arm to which the cross rod connecting the steering knuckles is attached and the other arm is fastened to the traverse nut on the steering pillar. The connection between the latter arm and the nut is sufficiently flexible as to permit the nut to travel from the top to the bottom of the thread without exerting undue strain on the bearing.

Letters patent No. 801,852, dated October 17; to Alfred Cousen, of Detroit, Mich.—The invention is a type of spring wheel, the aim of the construction being to secure the resiliency of the pneumatic tire by using springs and solid rubber tires. The wheel has a double set of rims, an inner one to which the spokes are attached and outer one on which the solid rubber or steel tire is carried. Between these two rims are two separate sets of springs. In one set the springs are S-shaped and are intended to resist all strain in radial direction, while between the S-shaped springs are other double curved springs that transfer the driving power from the inner rim to the outer one on the driving wheel. They also come into use when brakes are applied. The two sets of springs are so arranged that the double curve ones, made out of flat metal, connect with the inner end of one S-shaped spring with the outer end of the next S-shaped one. The inner and outer ends of both sets of springs are respectively connected to the inner and outer rims.

Letters patent No. 802,321, dated October 17; to Francis M. Rites, of Ithaca, N. Y.—The inventor's gasoline motor has a special device for opening the valve. The latter is placed in the bottom of a port on the side of the cylinder and is normally held shut by a coil spring surrounding the stem. The valve is opened from the crank shaft. Above this shaft is a half time gear, driven by a small gear on the crank shaft. On the gear on the crank shaft is a connecting rod connected with a fulcrum A working on an eccentric. Surrounding this eccentric fulcrum is the bearing of the arm B that opens the valve by a connecting rod from the half time gear.

Letters patent No. 801,150, dated October 3; to James A. Murphy and William S. Manning, of Springfield, Mass.—The inventors have a pneumatic tire with the casing provided with regular clincher lips. Between the air chamber and the outer part of the casing, or over the tread of the air chamber, is placed a reinforcement of rubber of greater circumference than the interior of the casing, the intention being that when the casing is distended radially this reinforcement will then have its entire force ready to resist blow outs.



HAGAR'S CARBURETER

GERLING'S DRIVE

Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

THE ENGINE—The engine forms so large a part of the system that it is difficult to include under one heading its many possible troubles and these have therefore been considered under separate heads as fully as possible. A frozen water jacket usually bursts on the outside without affecting the cylinder proper, but leaky cylinders sometimes occur from this or other causes, which impairs or prevents proper working. In many cases a defect of this kind will make itself known at starting in the morning, and drops of water are found on the spark plug or in the exhaust valve and pipes or in the crankcase. If the cylinder is cleared of water it may start and run all right, except with slightly diminished power and with difficulty of starting each time. Some experiences seem to indicate that the presence of water causes overheating, and where this is true it is probably due to a slow and imperfect combustion, with the charge exhausted half burned instead of burning and developing full power. Cylinders sometimes crack from other causes than freezing and hot water used to warm the cylinders on a cold morning has been known to cause trouble. Faulty lubrication, bent or broken shafting or other parts, and particularly valves and sparking mechanism out of time are to be looked for when the engine misbehaves. Lubrication also should be thoroughly considered. The resistance of a dry piston covered with burned and gummy oil is far greater than one would imagine and frequently sufficient to stop the motor. A cracked water jacket can usually be repaired temporarily by soldering with soft solder.

CIRCULATION—In connection with engine troubles, the water circulation or the air cooling, if air is used, are quite important. The pipes may be stopped up by a bit of waste or by deposit of lime and dirt or the pump or fan may not be running at speed and as a result of these things, the walls become overheated, which not only burns off the lubricating oil, but causes premature firing, either of which destroys power. From the overheated cylinder, the heat is conducted to the crank case and bearings, sometimes causing trouble there. In most of these troubles the difficulty is to find rather than to fix, and the user should familiarize himself with the entire system as rapidly as possible, so that he may both know what it is for and when it is in order. The man who is master of his mechanism not only makes it serve him, but he derives a pleasure from its use that is impossible to enjoy as a mere passenger trusting to chance that the machinery will behave properly.

GASKETS—It is quite common practice to use gaskets where two pieces of metal are fitted together for the purpose of securing a tight joint between the two surfaces which are not sufficiently perfect to join tightly otherwise. These gaskets are of different material, depending upon the places where they are used. Around the engine, asbestos is the common thing because it will not burn even if the engine is overheated but common paper, like tough wrapping paper, is sometimes used. A gasket should be as thin as possible, just thick enough to fill up the inequalities of the metal. It is quite evident that the gasket material is not so strong as metal on which account a thick gasket is more likely to blow out than a thin one. Special packing material is now made of asbestos having fine wire woven into it. This wire adds strength and prevents danger of blowing out quite largely. If it is likely that the joint will be opened, the gaskets should be prepared accordingly. A good practice is to coat one side with shellac or oil and the other side with graphite, which will cause the gasket to remain in place on one side while freeing itself from the other readily. Gaskets for water should be saturated with oil or heavy grease, while for gasoline, shellac or glycerine is advisable. Common soap also serves well, particularly on screw threads exposed to gasoline. Where the temperature is not high sheet lead serves well and for joints more permanent than can be made with asbestos, sheet copper is used.

GOVERNOR—Automobile motors being almost constantly in the care of the driver seldom use governors except in some cases for controlling the spark. The governor must be sensitive to do its work properly, and irregular action is usually due to the presence of dirt which clogs the moving parts or to weak and broken springs or to the presence of ice or water.

ICE—The usual thought of ice is in connection with the cooling system, and care must be taken that radiator and small pipes containing water are not exposed for any length of time to winter conditions. The circulating system should either have the small parts cut out, depending upon the mass of water in the engine and in the tank to avoid freezing under ordinary conditions or else it should not be filled at the approach of cold weather with a liquid not susceptible to the temperature to which it is likely to be exposed. Hot water, of course, is the common remedy for thawing frozen pipes and if at hand should be used in preference to other methods. Next to this a torch, keeping ever in mind the danger from fire where gasoline is present. Gasoline is most inflammable and this feature may be a power for evil as well as for good. With a squirt can the liquid gasoline may be dropt on the radiator where frozen and ignited but exercise care to apply but little at a time that the flame may never be large and make sure that there are no gasoline leaks about the main tank or anywhere on the premises. Gasoline may be safely squirted from the usual oil-can holding less than half a pint while flame is burning at the nozzle, and such a can may be used to thaw out a pump, cock or frozen radiator with flame under full control and with perfect safety. Turning the nozzle upward stops the flow of liquid and the flame goes out. This practice if followed must be with the greatest of care.

Water in the gasoline is troublesome enough, but ice is more so. The motor may run fairly well until the water is frozen because in splashing around sufficient gasoline passes to do the work but ice closes the openings, holds the float immovable and must either be removed or melted. Hot water or warm rags are the usual remedies, for fire around the vaporizer is not usually to be thought of. If the tank and vaporizer cannot be drained, provision for draining should be promptly applied and occasional testing for water in cold weather is advisable. In the machinery itself ice sometimes makes trouble. Driving in slush or rain or snow fills many joints with water, which freezing, renders the parts immovable and care should be taken in the morning not to force parts that seem solidly fixed, lest something be broken; for under such circumstances, ice grips most powerfully and stripped gears may result. Proper oiling is a preventative usually for such troubles. Heat must be applied to the frozen parts.

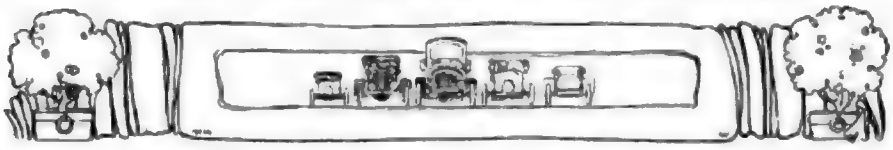
Ice in the feed pipe is frequently found on damp cold days. The evaporation of the gasoline causes the moisture of the atmosphere to deposit like a heavy frost, completely stopping the pipe and rendering the motor weak and very irregular. A little hot water will temporarily remove this, but the remedy is to heat the air pipe or the air and thus prevent or overcome this tendency. Usually a heater is provided by the maker. Examine this to see if it is clogged.

LUBRICATION—This subject is most important. Moving parts require oil and the operator should not only think but should know that they are properly supplied. Here simplicity comes in. A few parts can be watched more readily than many. Inspection of the parts is the only certain way to know their condition. Automatic devices are good but they always have had and always will have, one fault. They may fail when worst needed, and since the operator has learned to depend on them, they permit trouble to occur when least looked for. Pumps and valves are troublesome, long pipes clog easily but lubrication must be had and eternal vigilance it the price of it.

EDITOR'S NOTE—This is the fourteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

AMONG THE MAKERS AND DEALERS



Marvel Assistant—Harry E. Marvel has been appointed assistant manager of the Pope branch in Boston.

Taxis Quits—W. W. Taxis has resigned the managerial reins of the Philadelphia branch of the Ford Motor Co. and will be succeeded by L. E. Hoffman.

Michelin Man in Hub—E. A. Percy, formerly representative of the Michelin tires, is to establish a sundry house in Boston, having secured quarters in the new Motor Mart.

Orients Boston Agent—Lincoln D. Roberts of Lynn, Mass., has closed for the Boston branch of the Orient and will assume that position immediately upon the completion of the new Motor Mart.

On Decauville Business—E. S. Partridge, vice-president of the Decauville Automobile Co., is scheduled to sail for Europe today on the Amerika to arrange for next season's shipment of Decauville cars to this country.

Landed by Oakdale—Negotiations for the transfer of the plant of the Model Gas Engine and Automobile Works from Auburn, Ind., to Oakdale, Ind., have been completed and work on the plant will start at once. The company will employ 125 men on the new plant.

Fosdick Gets the Fiat—The Harry Fosdick Co. has secured the New England agency for the Fiat cars, Hollander & Tangeman making the appointment immediately after the Vanderbilt race. This car, together with the Studebaker, will be the big cars of the Fosdick combination.

Adams Going Back—Walter E. Adams of the home office of the Oldsmobile Company, is to go to Boston and take charge of the retail branch. Mr. Adams is by no means a stranger to that city. He was formerly sales manager of the Crest, and knows the New England trade like a book.

Peerless in Boston—The new Peerless was seen in Boston last week, it having been driven over the roads from Cleveland by Charles Schmidt, its designer, accompanied by Mrs. Schmidt, Lou Sackett and Charles Burnham. The party reported a trip of 2,500 miles. The tourists are now on the way home.

Home Garages—In a circular issued by the Pope Motor Car Co., of Indianapolis, illustrating simple arrangements by which Pope-Waverleys can be stored and charged at home is told the system followed in Rockford, Ill., where the fifty-four electrics in use there are inspected each week by the dealer at the expense of the owner. The average cost of current in Rockford is $3.54 per month. Some of the home garages shown are most simple, one man having built an addition to his house, the upper part of which is used for a sun parlor and the lower part for a garage. Another is built under one end of the front porch so that it is hardly noticeable.

After the Berliot—J. G. Bale, of Mendall, Dale & Co., New York, has gone to Europe to arrange for 1906 importations of Berliot cars.

Godwin Locates—Raymer Godwin, agent for the Thomas for Brooklyn and Long Island, has opened headquarters at 53 Grant Square, Brooklyn, adjoining the Union League Club.

Lines Wanted—Charles F. Beltz, manufacturers' agent for Pittsburg and western Pennsylvania, announces he is anxious to correspond with makers desiring representation in his territory. He has opened a large salesroom and handles automobile supplies of all sorts.

Whites' Quaker Branch—After a long search for a suitable location in Philadelphia, the White Sewing Machine Co. has secured the old Banker quarters, 629-631-633 North Broad street, above Wallace, for a local branch. E. C. Johnson, formerly of the Quaker City Automobile Co., has been installed as manager.

Moves Peerless Plant—The Peerless Motor Car Co., of Cleveland, has moved its general offices, together with all machinery, stock and tools, from its old time plant on Lisbon street to the new factory on Quincy and Oakdale streets. During the past year the company has been operating the old plant and one building, the first erected in the new plant. Two other buildings are now being completed and hereafter all work will be centralized at the new plant.

Tradesman Accused—An unlooked-for development in the trial of Stanley Francis, of the Storey Cotton Co., which was concluded in Philadelphia last week, was the arrest of J. Edward De Mar, manager of the National Automobile Co., of New York, on charges of attempting to bribe and influence witnesses of the prosecution. The Storey Cotton Co. was, it is charged, a get-rich-quick concern, and the National Automobile Co., it is alleged, is a subsidiary concern into which some of the money of the Storey victims had been invested. It is also alleged that the officers of the two concerns were identical. On Tuesday, the last day of the trial, after the jury had retired, the government sprung its trap, De Mar being arrested just as he was about to leave the courtroom. At the hearing on Friday, before United States Commissioner Craig, several of the government's witnesses in the Storey case testified that De Mar had approached them before that trial and offered them positions with various concerns, among them the National Automobile Co., if they would so color their testimony as to make it favorable to Francis. The stories the witnesses told were so convincing that Commissioner Craig decided that a prima facie case had been established against De Mar and the latter was held in $1,500 bail for the next term of court.

Zent's President—W. W. Osborn has been elected president of the Zent Automobile Co., at Bellefontaine, O., to succeed O. E. Yoder, who has resigned.

Uses Carriage Plant—Word comes from Amesbury that the Bailey Carriage Co. is to become the manufacturing plant of the Essex Motor Car Co. The Bailey plant, one of the largest carriage manufacturing plants in New England, has, it is understood, been turned over to the Essex Co., a new firm, organized for the purpose of producing a steamer.

Hub Recruit—The Morrison-Tyler Motor Co. will open its establishment in Boston within the next 2 weeks, and will handle the Rainier and the Maxwell-Briscoe products. Mr. Morrison of this firm was the former manager of the Peerless branch in Boston.

Row Too Crowded—Having been unable to secure a suitable location on automobile row in Philadelphia, the Wayne Automobile Co., of Detroit, Mich., has established quarters on Sixteenth street above Chestnut. W. M. Umbenhauer, the local representative, hopes, however, to have the Wayne suitably installed in a row establishment before next spring.

Good Done by Advertising—A. E. Maltby, manager of the Philadelphia Winton branch, reports unprecedented new business for this time of year. He ascribes the boom to the unique traveling exhibition of the Winton concern, which recently spent 3 days in the Quaker City and was visited by thousands of enthusiastic automobilists.

Cadillac Line—The Cadillac Automobile Co. announces that its line of multiple vertical cylinder cars will consist of the following: 22-horsepower four-cylinder five-passenger light touring car, 30-horsepower four-cylinder touring car and 40-horsepower four-cylinder de luxe touring car. All of them will have three speeds forward and direct drive by jointed propeller shaft.

Mercedes Shakeup—There has been a complete reorganization of the Mercedes Import Co., of New York. E. C. DeWitt, a Chicago advertising agent, is president; Walter C. Allen, formerly of Allen, Halle & Co., is vice-president and general manager; and Arthur Braun is secretary. Mr. Winebrgh, of Omega oil fame, has retired from the presidency. The company has established headquarters in the Tirius building. Smith & Mabley continues as Mercedes selling agent under the new arrangement.

Italy's Big Show—A great international exhibition, to commemorate the opening of the Simplon tunnel, will be held next year at Milan, Italy, at which show the progress made in means of transport will have first consideration. Automobiles will have one of the principal buildings. The German manufacturers consider this show of such importance that they have called in the assistance of the automobile club, which has given its promise to make all arrangements for concerted action. The German firms will not exhibit individually, but arrange to have one grand stand.

Digitized by Google

to be called the German automobile show, where everything will be found that the Fatherland produces in the motor line.

Winton Going Abroad—Alexander Winton is to sail this week for Europe. He will visit the leading factories and attend the Paris show.

Radiator Test—L'Auto, the French daily, is planning to hold a radiator test this winter. It will be in the form of a competition, with prizes offered for the successful maker.

Sell for Spring Delivery—Advance retail orders already received for spring delivery lend the Rainier Co., of New York, to predict that if this pace is kept up its 1906 product will be sold before show time.

Increase Territory—Homan & Schultz of New York, have had their territory for the National automobiles increased. In addition to Greater New York and Long Island, it now embraces Hudson and Bergen counties in New Jersey; Orange, Rockland and Westchester counties, in New York, and Fairfield county, in Connecticut.

Gallaher to Move—E. B. Gallaher, importer of the Richard-Brasier and Newport agent for the Cleveland, will occupy on November 1 his new garage at 228 and 230 West Fifty-ninth street, New York. It is a five-story structure formerly occupied by the De Cerron stables and adjoins the E. B. Rice Baker electric garage, a lease has been taken for 10 years.

Cadillac Garage—The Cadillac Company of New York, metropolitan agent for the Cadillac, expects to move about February 1 into its fireproof building situated on the corner of Sixty-second street and Broadway. It will have a frontage of 52 feet on Broadway and 72 feet on Sixty-second street. It will cover 20,000 square feet of land and will consist of four stores and a basement all devoted entirely to the Cadillac business.

Horseshoers Shiver—J. C. Buckley, a delegate to the Master Horseshoers' Convention in Kansas City, Mo., admits that the automobile has affected his industry by making apprentices scarce. "Fear of the automobile driving the horse into the list of extinct species has so decreased the number of apprentices to the horseshoeing business that we were hard put to it for a while in some of the eastern states to get assistants," said Buckley, "and we are now considering suggestions for establishing a horseshoeing technical school at Detroit, Mich."

A. L. Co. Finds Location—The American Locomotive Co., which is entering extensively into the manufacture of automobiles, will have for its New York headquarters one of the finest and best located garages in town. It has leased from the Auto Import Co. the building it is erecting at the northeast corner of Broadway and Fifty-seventh street, which was originally intended to be the future home of the Rochet-Schneiders in this country. An offer of $35,000 per annum rental, however, proved too strong a temptation for Messrs. Josephs and Eichberg to resist, and a lease was made. The Auto Import Co. will retain its present salesroom on Broadway, to which has been added the upper story of the adjoining building to increase the storage and repair shop facilities.

Foss Now a Quaker—The George N. Pierce Co., of Buffalo, and the Cadillac Automobile Co., of Detroit, will be represented in Philadelphia next season by W. J. Foss, formerly of Boston, who has secured the agency for these vehicles in the Quaker City and contiguous territory.

Thomas' Metropolitan Garage—Immediate work is to be started in New York upon the Thomas garage which is to be located at the southeast corner of Sixty-third street and Broadway—114 feet on Broadway and 145 feet on Sixty-third street. One-half of a city block will be covered by the building, which will be four stories and basement in height. E. R. Thomas, of Buffalo, purchased the land last Thursday and at once delegated the building firm of Haupt & Phinney to construct thereon a garage modern in every way and embodying a great many novel features. In the new Thomas garage 500 cars will be stored. The sales room will occupy the corner store and there will be in addition three other stores on Broadway which will be rented to other automobile dealers who will have the advantage of the storage space in the rear and above. Much of the space on the main floor back will be used for the storage of demonstration cars for the occupants of the building. Mr. Haupt, who will manage the place, will occupy the premises April 1. The deal represents, it is said, an expenditure of a half million dollars. The property was purchased outright. Mr. Haupt will continue to handle the Thomas car for 5 years to come.

LATE INCORPORATIONS

Troy, N. Y.—The Troy Garage Co., of Troy, has been incorporated with a capital stock of $500.

Detroit, Mich.—The Feebook Auto Co., of Detroit, has been incorporated with a capital stock of $25,000.

Albany, N. Y.—The Auto Exchange of Albany has been chartered by the secretary of state with a capital of $500.

Guthrie, Okla.—The Automobile Tire & Repair Co., of Guthrie and Chicago, has been incorporated with a capital stock of $10,000.

Guthrie, Okla.—The Southwestern Transit Co. has been incorporated with a capital stock of $25,000, to operate an automobile line.

Quincy, Mass.—The Griswold Mfg. Co. has been incorporated with $25,000 capital, to manufacture automobiles. Robert Griswold is president and treasurer.

Hammondsport, N. Y.—The George H. Curtis Mfg. Co. has been incorporated with a capital stock of $40,000 to engage in the manufacture of motor vehicles.

Aurora, Ill.—The Practical Automobile Co., of Aurora, has been incorporated with a capital stock of $100,000. The company will engage in the manufacture of automobiles.

Ossining, N. Y.—The Hutchinson Electric Horn Co. has been incorporated with a capital stock of $20,000. It will manufacture horns for automobiles and horseless vehicles.

New Orleans, La.—The Independent Auto Co., Limited, has been incorporated with a capital stock of $25,000. The company will deal in all kinds of automobiles and automobile supplies.

New York City—The Automobile Sales Co. has been incorporated, to deal in automobiles; capital, $10,000. President, Lorenzo D. Bates, 138 Summer street, Brockton, Mass.; treasurer, Fred S. Macalaster, 486 Brookline avenue, Boston; clerk, Annie J. Tingley, 246 Norfolk street, Cambridge, Mass.

New York City—The Automobile Buyers' Association has been incorporated, to manufacture and deal in automobiles, motor boats, etc.; capital, $10,000. Incorporators: Samuel C. Meyer, 98 Chambers street; Eugene C. Harding and Clarence E. Mandy, both of 135 Front street, all of New York.

Ford in Boston—It is authoritatively stated that the new manager of the Boston branch of the Ford company will be named on November 1, and that he will be a Bostonian well-known in the motor trade.

It's a Boy—"Richard Ives Welles, born October 7, 1905," reads the card sent out by Mr. and Mrs. Richard Head Welles, of Kenosha, Wis. Translated, it means Dick Welles, of Solar light fame, is now a father.

Office in Old Mansion—The E. R. Thomas Co., of Buffalo, has moved its general offices from the quarters in factory No. 1 on Niagara street to an old mansion located just behind the new factory addition. Work on the factory addition is being rushed and machinery will be moved in soon.

Matheson Officers—The election of officers of the Matheson Motor Co., of Wilkesbarre, Pa., resulted as follows: President, Charles W. Matheson; vice-president, Henry U. Palmer; secretary, F. F. Matheson. It is expected that the new plant will be in operation by January 1 and that the machines will be on the market in the spring.

Wayne's '06 Goods—Officials of the Wayne Automobile Co., during their visit to Newport for the Vanderbilt cup race, made the statement that the company's 1906 line would include four-cylinder cars of 30 and 60 horse power, a 16-horse power runabout and a 20-horse power touring car, the last two with double opposed cylinders.

Fostoria Enterprise—The Detroit-Oxford Mfg. Co., of Oxford, Mich., has made Fostorians a proposition to locate in Fostoria, O., and give the concern the name of the Fostoria Auto Car Co., if the citizens of that town will take $50,000 of the $150,000 preferred stock. Nearly all the stock has been subscribed, it is reported. The capital stock of the company will be $300,000, but $150,000 will be common. Each preferred share is $250. The Michigan people propose to take fifty families to Fostoria, the men to be employed in the plant, which will employ by the end of the first year from 100 to 150 men.

Branch in Trouble—Petition in bankruptcy has been filed against the de Dietrich American branch, a New York corporation at 215 West Forty-eighth street, by Thomas & Openheimer. It is alleged that the corporation is insolvent and has transferred some of its property. Mr. Thomas said that the liabilities are about $8,000, but could give no figures as to the assets, as there would probably be a legal fight to secure possession of them. The corporation was incorporated under the laws of the state of New York on May 5, 1905, by Frederick de Turckheim. A petition in bankruptcy was filed against him on October 12. Baron de Turckheim is one of the principal creditors.

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.
W. GRANT MURRAY, Second Vice-Pres., Adrian, Mich.
S. W. MERRIHEW, Third Vice-Pres., 154 Nassau St., New York.
FRANK A. EGAN, Secretary, 132 Nassau St., New York.
FREDERICK B. HILL, Treasurer, 32 Binford St., Boston.
National Headquarters Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

STATE DIVISIONS

As announced last week, the division of the important states into separate districts has been taken up and the districts embraced in the New England states and in the New York division have already been published. From each of these districts a number of prominent automobilists will be selected to represent the state division in its board of officers, and the board thus formed will take up the work of the league within the state and adopt all rules and by-laws necessary for the selection of future officers and the carrying on of division work. The division of other states into districts is announced as follows:

NEW JERSEY DIVISION

District 1, counties of Hudson and Bergen; district 2, counties of Passaic, Morris and Sussex; district 3, counties of Union and Essex; district 4, counties of Warren, Hunterdon and Somerset; district 5, counties of Middlesex, Monmouth and Ocean; district 6, counties of Mercer and Burlington; district 7, counties of Atlantic, Camden, Cape May, Cumberland, Gloucester and Salem.

PENNSYLVANIA DIVISION

District 1, Philadelphia; district 2, counties of Delaware and Chester; district 3, counties of Montgomery and Bucks; district 4, counties of Lancaster, Berks, Lehigh and Northampton; district 5, counties of York, Adams, Cumberland, Perry, Lebanon and Dauphin; district 6, counties of Juniata, Snyder, Northumberland, Montour and Schuylkill; district 7, counties of Carbon, Luzerne, Columbia, Monroe and Lackawanna; district 8, counties of Pike, Wayne, Susquehanna, Wyoming, Bradford and Sullivan; district 9, counties of Tioga, Lycoming, Union, Mifflin, Clinton, Center and Huntingdon; district 10, counties of Franklin, Fulton, Bedford, Blair, Cambria, Somerset and Fayette; district 11, counties of Potter, McKean, Cameron, Elk, Clearfield and Jefferson; district 12, counties of Westmoreland, Indiana, Armstrong, Clarion and Venango; district 13, counties of Warren, Forest, Erie, Crawford and Mercer; district 14, counties of Butler, Lawrence, Beaver, Washington and Greene; district 15, county of Allegheny.

DELAWARE DIVISION

District 1, county of New Castle; district 2, counties of Kent and Sussex.

MARYLAND DIVISION

District 1, county of Baltimore; district 2, counties of Hartford, Cecil, Kent, Queen, Anne, Caroline and Talbot; district 3, counties of Dorchester, Wicomico, Worcester, Somerset, St. Mary and Calvert; district 4, counties of Charles, Prince George, Arundel and Anne; district 5, counties of Carroll, Howard, Montgomery and Frederick; district 6, counties of Washington, Allegheny and Garrett.

OHIO DIVISION

District 1, counties of Ashtabula, Trumbull, Lake, Geauga and Portage; district 2, county of Cuyahoga; district 3, counties of Mahoning, Columbiana, Jefferson, Harrison, Carroll and Stark; district 4, counties of Tuscarawas, Guernsey, Belmont, Noble, Monroe and Washington; district 5, counties of Summit, Medina, Wayne, Lorain and Ashland; district 6, counties of Erie, Huron, Crawford, Seneca, Sandusky and Ottawa; district 7, counties of Holmes, Coshocton, Muskingum, Morgan, Perry, Licking and Knox; district 8, counties of Athens, Meigs, Gallia, Lawrence, Jackson, Vinton and Hocking; district 9, counties of Fairfield, Pickaway, Ross, Pike, Scioto, Adams, Highland and Fayette; district 10, counties of Brown, Clermont, Warren, Clinton, Greene and Madison; district 11, counties of Lucas, Wood, Hancock, Hardin and Wyandot; district 12, counties of Fulton, Williams, Defiance, Henry, Paulding and Putnam; district 13, counties of Van Wert, Allen, Mercer, Auglaize, Logan and Shelby; district 14, counties of Darke, Miami, Champaign, Clark and Montgomery; district 15, counties of Richland, Morrow, Marion, Union, Delaware and Franklin; district 16, counties of Preble, Butler and Hamilton.

INDIANA DIVISION

District 1, counties of Steuben, DeKalb, Noble, Lagrange, Elkhart and Kosciusko; district 2, counties of St. Joseph, Marshall, Starke, Laporte, Porter and Lake; district 3, counties of Allen, Whitley, Huntington, Wells and Adams; district 4, counties of Blackford, Jay, Delaware, Randolph, Henry, Wayne, Union and Fayette; district 5, counties of Wabash, Miami, Grant, Howard, Tipton, Hamilton and Madison; district 6, counties of Fulton, Cass, Carroll, Pulaski, Jasper, Newton, Benton and White; district 7, counties of Warren, Tippecanoe, Clinton, Fountain, Montgomery, Boone and Vermilion; district 8, counties of Hendricks, Putnam, Parke, Clay and Vigo; district 9, county of Marion; district 10, counties of Hancock, Rush, Decatur, Bartholomew, Brown, Shelby and Johnson; district 11, counties of Franklin, Dearborn, Ripley, Ohio, Switzerland, Jefferson and Jennings; district 12, counties of Morgan, Owen, Monroe, Lawrence, Greene and Sullivan; district 13, counties of Knox, Daviess, Martin, Pike and DuBois; district 14, counties of Jackson, Scott, Washington, Clarke, Floyd, Harrison, Crawford and Orange; district 15, counties of Perry, Spencer, Warwick, Vanderburg, Posey and Gibson.

MICHIGAN DIVISION

District 1, county of Wayne; district 2, counties of Monroe, Lenawee and Hillsdale; district 3, counties of Branch, St. Joseph, Cass and Berrien; district 4, counties of Kalamazoo, Van Buren and Allegan; district 5, counties of Calhoun, Jackson, Eaton, Barry and Ionia; district 6, counties of Washtenaw, Ingham, Livingston, Clinton and Shiawassee; district 7, counties of Lapeer, Genesee, Oakland and Macomb; district 8, counties of Huron, Tuscola, Sanilac and St. Clair; district 9, counties of Gladwin, Arenac, Bay, Midland, Saginaw and Gratiot; district 10, counties of Oceana, Newaygo, Muskegon, Kent, Montcalm and Ottawa; district 11, counties of Mason, Lake, Osceola, Clare, Isabella and Mecosta; district 12, counties of Manistee, Wexford, Missaukee, Kalkaska, Grand Traverse, Benzie, Leelanau, Antrim, Manitou, Charlevoix and Emmet; district 13, counties of Roscommon, Ogemaw, Iosco, Alcona, Oscoda, Crawford, Alpena, Montmorency, Otsego, Cheboygan and Presque Isle; district 14, counties of Mackinac, Chippewa, Luce, Schoolcraft and Alger; district 15, counties of Delta, Menominee, Dickinson, Iron, Marquette, Baraga, Houghton, Keweenaw, Ontonagon, Isle Royale and Gogebic.

OTHER STATE DIVISIONS

The districts for Illinois, Iowa, Wisconsin, Minnesota, Missouri, Kansas, Kentucky, Tennessee, Colorado, California and other states will be announced in due order.

Digitized by Google

WINTON

Up-Keep Reduced by Ground Cylinders and Pistons

Insist upon having **GROUND** cylinders and pistons.

Because GROUND cylinders and pistons protect your pocket-book.

The only perfect automobile engine—the only engine that does not leak compression and eat itself up with friction—is the one that has **Perfectly Circular** Cylinders and **Perfect Fitting** Pistons.

Cylinders are either bored or reamed, or GROUND.

The Horseless Age says: "In automobile engines the cylinder walls are necessarily thin, and when the surface is finished by boring or reaming, there is a continual tendency of the iron to spring away from the cutting tool. If there are hard and soft spots in the iron it is almost **impossible** to have the boring tool cut a perfectly round hole, as the iron in this thin shell will spring away from the tool and come back again after the tool has passed on. With **grinding**, however, this is **not the case**, because there is not the pressure against the walls of the cylinder with the grinding wheel that there is with a boring tool."

The GROUND cylinder, then, is exactly ROUND, while the bored or reamed cylinder is not.

When cylinders are not perfectly round, the pistons cannot fit perfectly, and consequently compression leaks through the uneven places into the crank chambers.

All compression that leaks represents just so much wasted power and wasted money. You pay money for gasoline to make power, and part of that gasoline slips away at every piston stroke when the cylinder is not ground.

A 40 H. P. engine with bored (leaky) cylinders may only produce 20 actual H. P.

The 30 H. P. Winton Model K, with **perfectly ground** and **perfect fitting** cylinders and pistons produces 30 actual H. P. No waste power, no waste of money, but an engine that turns your money (gasoline) into driving power.

In addition to wasting power, non-ground, uneven cylinders and pistons begin their own ruin the first minute they run. One uneven spot working against another soon puts cylinder and piston out of business. Then repairs, replacements and EXPENSES.

But the **perfectly ground, perfect fitting** cylinders and pistons of the Winton Model K have no rough spots, no wear. They run indefinitely in perfect condition, saving gasoline, power and money and cutting out repair bills and replacements.

Winton Model K—Four cylinder, vertical, water-cooled. 4¾ inch bore, 5 inch stroke. Individual clutch transmission. Winton Air Governor. Best systems of lubrication, ignition and carburetaton. $2,500 f. o. b. Cleveland. Catalog No. 3 is ready.

THE WINTON MOTOR CARRIAGE CO.

CLEVELAND, OHIO, U. S. A.

MEMBER A. L. A. M.

Winton Model K Transcontinental Exposition now en route, visiting all the big cities

Don't fail to see it

Digitized by Google

What the New York Papers Said About

FIAT

AUTOMOBILES IN THE

Vanderbilt Cup Race

LANCIA, THE ITALIAN.

Virtually the victor in the great contest. He is rammed by an American and is then forced to abandon hope and the battle.

To France the cup, to Italy the glory.

Whatever the figures may say, that was the true result of the international automobile race for the Vanderbilt trophy.

Officially August Hemery, in his eighty horsepower Darracq, was proclaimed the victor,. Popularly the laurels went to Vincenzo Lancia, in his marvelous Fiat, from Turin, with 120 horsepower. More than 150,000 persons who saw the event voiced that verdict at the end.

Flying over the earth like a projectile propelled by some superhuman force and with incredible intrepidity, Lancia led from the start and had literally run away from his competitors when the disaster fell upon him. He had covered seven of the prescribed ten laps, a distance of 196 miles, in 170 minutes, more than a full lap ahead of his nearest antagonist, and was consistently maintaining this amazing speed with a virtual certainty of breaking all records.—*Herald.*

LANCIA LEADS ENTIRE FIELD.

Heading the entire field of competitors by more than thirty miles, Lancia completed the seventh turn at 8:52 o'clock and was greeted with a mighty cheer. He was still traveling at about seventy miles an hour, but notwithstanding his terrific going he turned in his car and waved his hand in appreciation of the cheers.

Lancia, the Italian, would undoubtedly have won but for the collision with Christie. He had broken all speed records up to the time of his accident.—*World.*

LANCIA'S BRILLIANT WORK.

Those who saw the race will understand that it is not unfair to the winners to say that the driving of Lancia, the Italian, was the sensation of the day. Taking the lead on the third round, he held it lap after lap, and was leading by over twenty minutes. Such driving and such a perfect machine were never seen before in the United States.

Lancia apparently opened up his Fiat when he received the word "Go!" and never closed it down. Foxhall P. Keene, than whom there is no better authority on automobile racing in the world today, was unstinted in his praise of the foreigner. Mr. Keene said:

"I never saw such driving before, nor such a smooth running car. There is no one in the race today who can follow the pace set by the Italian."—*Tribune.*

The feature of the race was the wonderful driving of Lancia, the Italian, in his Fiat.

The stands stood up and cheered him again. Such driving had never been seen in this country before. With six racers behind him and with a generous lead, the race seemed his, barring accidents.—*Sun.*

LANCIA SEEMED A SURE WINNER TILL CHRISTIE RAN HIM DOWN.

The Christie car cheated Lancia, the Italian, on his 120 horsepower Fiat, out of the greatest victory ever won in an automobile race while Lancia was far ahead of his closest rival. Walter Christie drove his car into the Fiat and smashed its side.

Lancia drove a phenomenal race. He set a pace of more than seventy miles an hour. The Italian driver varied hardly ten seconds on any of his rounds up to the time his car was injured.—*Eagle.*

TRAIN RECORDS LEFT BEHIND.

Fastest Railroading in the World Takes a Back Seat to Lancia.

The figures of Lancia up to the time he met with a mishap yesterday easily eclipse those records. The fearless Italian driver negotiated the first 198 miles of the Long Island course in the incredibly brief period of 150 minutes. So far as is known, this is not equaled by any regularly scheduled railroad train.—*Eagle.*

LANCIA LOST BY ILL LUCK.

When thirty miles ahead his machine is wrecked. Beat a mile a minute. Italian driver made better than 80 miles an hour in straight sections.—*Times.*

Lancia's completion of the seventh round put him a lap ahead of the entire field, something unheard of before in motor racing. His time was 2:49:52, or 169 minutes for 196 miles, an average of almost seventy miles an hour, an unprecedented performance in an auto race either here or abroad. World's records were falling like hail. Lancia's speed was increasing each time. His fastest lap being 23:10 or 72½ an hour.—*Globe.*

LANCIA HERO OF RACE.

Lancia, of the Italian team, was the hero of the fastest lap, and, though he only finished fourth, 1 minute 55 seconds behind Tracy, the American, he was the popular hero of the race.—*Press.*

Lancia, before his accident, did some of the most wonderful driving ever seen in America. He completed half the total distance of 283 miles in two hours, two minutes and five seconds. This was 142 miles in 122 minutes. Wm. K. Vanderbilt said: "The race was a very great success and remarkable speed was made. Lancia drove a very fine race, and had it not been for his unfortunate accident would have made a marvelous record for the course.—*Journal.*

Intending purchasers should call and inspect Fiat Cars. Both closed and open bodies now ready—the product of the foremost European and American designers, completely equipped, ready for the road when purchased.

HOLLANDER & TANGEMAN

Sole American Agents, Licensed Importers Under Selden Patent.

3 and 5 West 45th Street .... NEW YORK

Digitized by Google

The Economy of
FRANKLIN
Air-cooling

Not only does *Franklin* air-cooling do all that water-cooling will do, but does it better, easier and cheaper.

In the famous Long Island Economy Test last June a *Franklin* car won the trophy over sixteen competitors—nearly all water-cooled cars—though three of them were steamers.

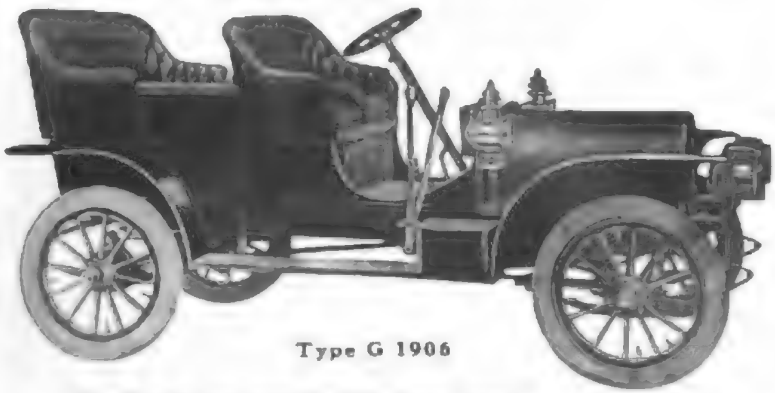
The cost of oil used by the winning *Franklin* was	.44
The gasoline cost	2.44
Tire repairs	.25
A total of	$3.22 **to carry four people 190 miles.**

When the air-cooled *Franklin* cut the best water-cooled record between San Francisco and New York from 61 down to less than 33 days, the whole trip of some 4,500 miles was made on 201 gallons of gasoline and a proportionately small oil consumption.

Over the hottest part of the route—from Wadsworth to Ogden—across the furnace-like Humbolt Sink, the air-cooled *Franklin* made double the distance each day that was made by its water-cooled rival and no trouble from hot cylinders.

Mr. W. A. Beardsell, Madras, India, in his 1904 type 10 h. p. Franklin runs one hundred miles on three gallons of petrol and with four passengers does a mile in 1.55.

A few large cold facts of this sort—and we can give you a hundred of them—are all a reasonable man needs to settle forever the question of *Franklin air-cooling economy.*



Type G 1906

Four 1906 Models

Type E. Four-Cylinder Runabout or Gentleman's Roadster.
Type G. Four-Cylinder Light Touring Car.
Type D. Four-Cylinder Touring Car.
Type H. Six-Cylinder Touring Car.

Type G 1906. 4-Cylinder Light Touring Car.

Four cylinders. Air-cooled. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. 4 or 5 passengers. Side doors. 88-inch wheel base. 32 "Franklin horse-power." 1,300 pounds. 35 miles per hour. Full head and tail-light equipment. $1,800, F.O.B. factory.

This will be the most popular car of the coming season.
It will suit more people, and suit them harder, than anything else on rubber tires.
It has all the "go" of the *Franklin* motor; *Franklin* lightness and super-strong construction; the ease of *Franklin* spring-suspension; and the *Franklin* bigness of capacity without excessive bulk, weight and operating cost.
There isn't another car that will do so much for the money. There won't be for many years.

Write for the book

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

MITCHELL

The Car You Ought to Have, at the Price You Ought to Pay

1906 MODELS

We have commenced deliveries on Model 4B and Model 2B of our 1906 line. Both of these cars are considerably improved over 1905 and several valuable features have been added, but no pronounced changes have been made in the construction of either as the success of both has been too decided to warrant it. The car illustrated on this page is

MODEL 2B

2 cylinder, 8 h. p., vertical motor, mounted in front.

$750

No car at any price surpasses this magnificent runabout in smartness of appearance or absolute dependability. It is as carefully designed and built as any $3,000 or $4,000 car on the market.

It has ample power for every condition of road, climbs hils with perfect ease and stands unquestioned by all who *know it*, the best car in the entire world at the price.

Write for 1906 catalogue—the handsomest ever published.

Mitchell Motor Car Co.

RACINE, WIS.

Members Licensed Motor Car Manufacturers Association, Chicago.

Digitized by Google

What concerns you is not the size of the engine nor the horsepower the maker claims for it. You are only interested in the results---hill climbing---road speed---power in sand, etc.

We have said a lot at various times about getting a greater proportion of the engine horsepower delivered to the rear wheels of the STEVENS-DURYEA than any other car.

There never was anything easier to satisfy yourself about---a bit of sandy road---a stop-watch---the STEVENS-DURYEA'S time vs. the other car's time---the size of the STEVENS-DURYEA engine vs. the size of the other.

TRY IT

J. STEVENS ARMS & TOOL CO.
Makers of the "Twentieth Century Hustler"
705 Main Street CHICOPEE FALLS, MASS.
Member Association Licensed Automobile Manufacturers.

Digitized by Google

ANNOUNCEMENT

The New Model 1906 Rainier

30-35 H. P.

has arrived. Note specifications below, then inspect it and try it. Experts who know Auto-cars from A to Z will be forced to admit that in beauty, workmanship, enduring strength and every other requisite of a perfect touring car, this magnificent new Rainier is THE American Automobile.

Engine—30-35 H.P., 4-cylinder, water-cooled.
Ignition—Sims-Bosch Magneto. Make and break spark.
Transmission—Sliding train, three speeds forward and one reverse.
Rear Axle—Bevel gear drive, clutch driven hub, ball bearings.
Front Axle—I beam section, ball bearings.
Frame—Cold rolled pressed steel, aluminum under-bonnet covering entire engine and transmission.
Wheel Base—104 inches.
Wheels—Imperial whalebone, grade A second growth hickory.
Tires—Continental, 34x4.
Valves—Mechanically operated, inlet and exhaust interchangeable.
Carbureter—Float feed, requiring no adjustment.
Brakes—Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
Body—Full aluminum, double side entrance.
Equipment—Two headlights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000

The 22-28 h. p. will be continued as heretofore without any changes. 4-cylinder, 98-inch wheel base, La Coste coil, French battery, Continental tires, aluminum side door body.

Price, $3,500

Both models guaranteed free of repairs for one year. The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for October and November delivery.

THE RAINIER COMPANY

Broadway, cor. 50th Street NEW YORK

Boston Agents, Morrison-Tyler Motor Co. Good agents wanted in unassigned territory.

Digitized by Google

Peerless

1906 Peerless at the end of the Buffalo trip

The Peerless 1906 Model

is our attempt to make the best car that can be built. Frankly, we are proud of it. The new car has been tested out under the most difficult conditions we could devise. After days and weeks of the hardest kind of tests on the hills and on the level, in which it came out with flying colors in every case, it was sent 400 miles over the road, through the mud. Twenty-eight miles an hour from Cleveland to Buffalo over rough and muddy roads with four people in the car is certainly more than creditable for the first car finished. Especially since it came back to the factory in the same perfect condition that it went out, and that without an adjustment.

SEND TODAY FOR 1906 INFORMATION

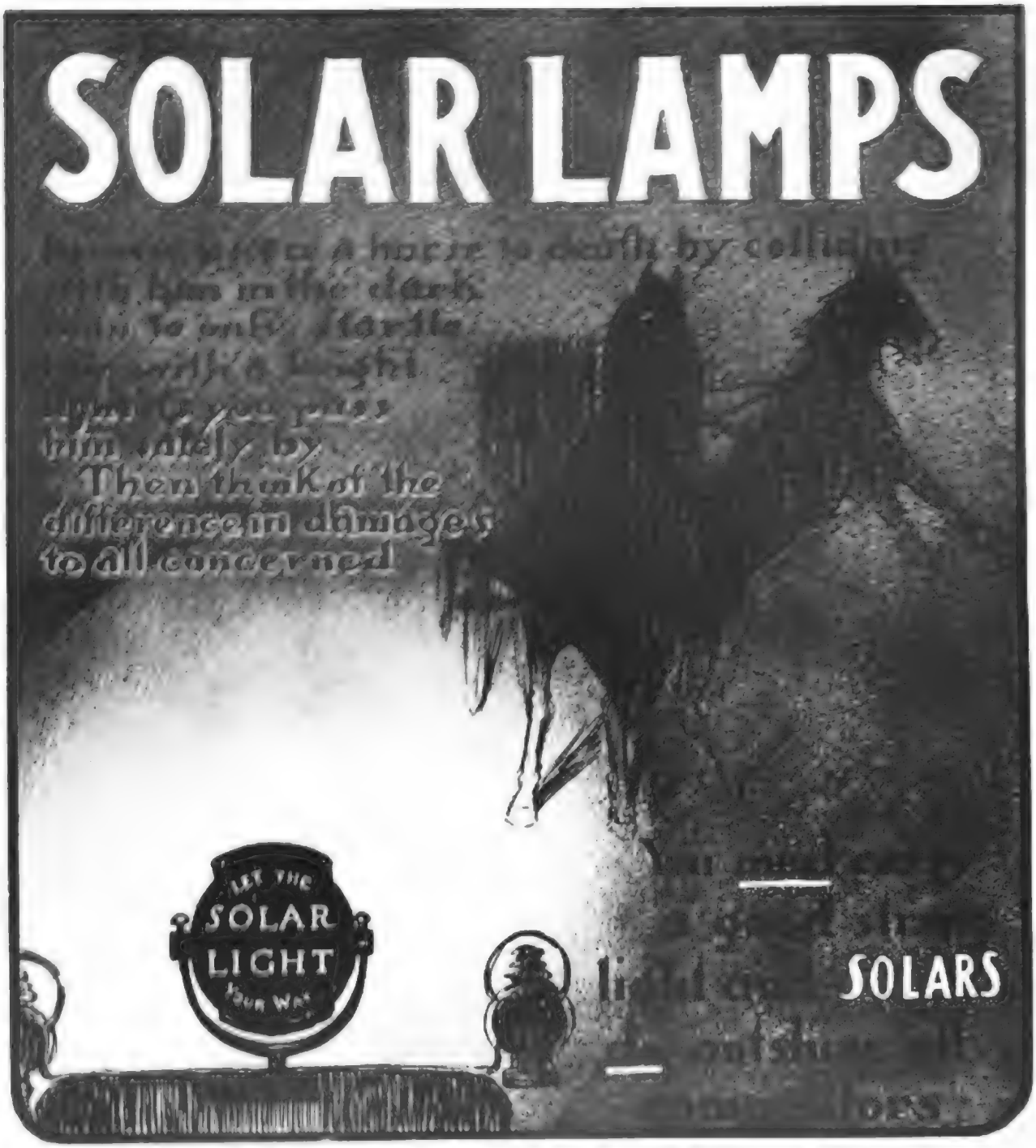
Surely the new model of the same car that holds the stripped touring car record of 58 3-5 seconds and the 1000 mile non-stop record, ought to be thoroughly considered if you are looking for the best car.

THE PEERLESS MOTOR CAR CO.

Lisbon Street, Cleveland, Ohio

Member A. L. A. M.

Digitized by Google



GET OUR BOOKLET OR ASK YOUR SUPPLY MAN

BADGER BRASS MFG. COMPANY

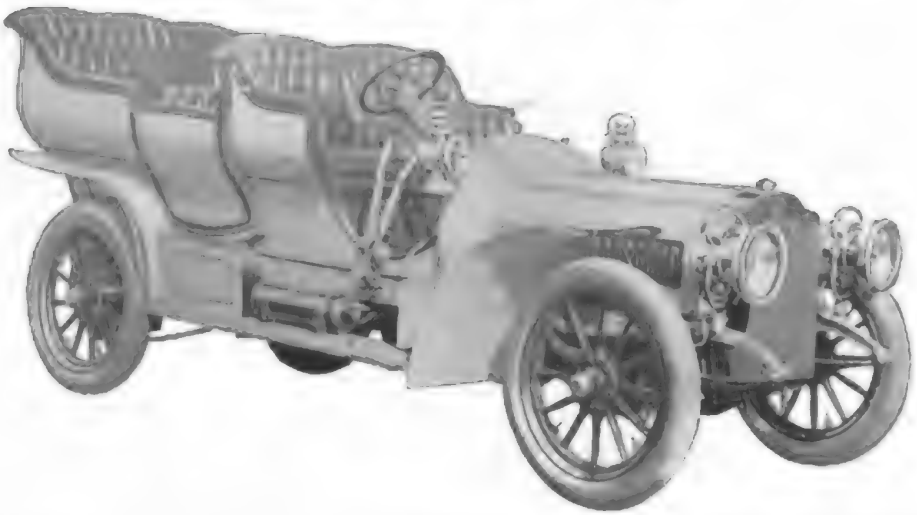
KENOSHA, WISCONSIN

NEW YORK OFFICE, 11 WARREN STREET

When Writing to Advertisers Please Mention Motor Age

Digitized by Google

THOMAS
1906



In spite of the fact that we are completing the finest fire-proof factory in the world with a capacity of one thousand high powered automobiles per annum, it looks very much as though last year's scramble for Thomas Cars was going to be repeated.

Last year, premiums of all the way from $150 to $750 were refused for Thomas cars. We were likewise compelled to refuse orders for 50 per cent of our capacity.

The only sales we lost were those of a few unposted persons here and there, who couldn't see how so much value could be sold at so reasonable a price.

That idea was demolished last season and the fact that the 1906 Thomas is far costlier than the 1905 model without a change in price makes it unquestionably the greatest automobile value in the world today.

In brief what you have to consider is a car which demonstrated last year its superiority to cars costing from $1,500 to $4,000 more money.

A car with 50 H. P. (actual) which is quieter than it was last year; smoother than it was last year; has larger motors; is far more beautiful; far more comfortable, seating five or eight all fronting forward; with perfect clutch; perfect control; four-speed Hess-Bright Ball bearing transmission; four powerful brakes; forgings throughout; material guaranteed to be the costliest made; fifteen Hess Bright Bearings and one roller.

Analyzing this 1906 offering of power, beauty and the highest degree of construction, and bearing in mind what I have said to you about the probability of a greater demand than we can supply even with our increased capacity of 1,000 high powered automobiles per annum—do you not think it advisable for you to investigate the Thomas without delay by consulting our nearest representative?

E. R. THOMAS,

For the E. R. Thomas Co.

E. R. THOMAS MOTOR COMPANY

1202 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google

STANDARD
RIMS
STAND THE STRAIN
of automobile use. Takes a good rim to do it. The best thing about "Standard Rims" is that they stand rough usage—under all conditions—without giving any trouble.
Look for the figure "1" beneath the Tire Inspector's stamp—that signifies it's our Rim.
"The Only Rim That's Really Right"
Insist on it.—Demand it.
THE STANDARD WELDING CO.
CLEVELAND
McCLENNAN & ORR
WESTERN REPRESENTATIVES
CHICAGO.

Digitized by Google

CORBIN
AIR-COOLED CARS

MODEL D Limousine
$3 000 to $,500

FOR WINTER USE

Air-cooling, which is highly desirable at all seasons, is especially advantageous when applied to cars for cold weather driving. Our Catalogue tells you many things you ought to know, particularly the story of air-cooling. Sent on request.

Corbin Motor Vehicle Corporation
NEW BRITAIN, CONN.

NEW YORK, 4 West Thirty-Eighth St.
BOSTON, 43 Columbus Avenue
PHILADELPHIA, 629 North Broad St.
CHICAGO, 1404-6 Michigan Avenue

Digitized by Google

Motor Age Circulation

The above cut represents Post Office Receipts for 7,921 pounds net, of issue of October 12, 1905.
Each paper, including wrapper, weighed an average of 11 ounces.

7,921 pounds divided by 11 ounces equals	11,521	papers
We also sold, **non-returnable,** to Western News Co. and news stands direct	659	"
Mailed under stamps to foreign addresses	88	"
Retained for office sales and distribution	350	"
Shipped to New York for distribution at Vanderbilt race	250	"
Total for week of October 12	13,268	"

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	"
August 31, page 58, statement for August 17	12,176	"
September 7, page 29, statement for August 24	12,271	"
September 14, page 42, statement for August 31	12,518	"
Average weekly edition for August, 12,468.	62,393	"
September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	"
October 5, page 46, statement for September 21	12,283	"
October 12, page 52, statement for September 28	12,532	"
Average weekly edition for September issues, 12,535.	50,141	"
October 19, page 50, statement for October 5	12,239	papers
Including above for October 12	13,268	"
Average for two issues in October, 12,753.	25,507	"

MOTOR AGE, *N. H. VanSicklen*
Manager.

Digitized by Google

for SPEED·ENDURANCE·RELIABILITY

WITHERBEE

STORAGE BATTERY IGNITER

The recognized standard equipment of the leading road and racing cars. Endorsed by thirty-two of the leading automobile manufacturers. Every battery guaranteed to give satisfaction or purchase money refunded.

FOUR OF THE FIVE CARS THAT COMPLETED THE ELIMINATING TRIALS FOR THE VANDERBILT CUP RACE USED THE

Witherbee Storage Battery Igniter

EXCLUSIVELY FOR IGNITION

Can you afford to consider any other for your '06 car?

Write for Descriptive Pamphlet and Price List. *Electros furnished jobbers*

Witherbee Igniter Company

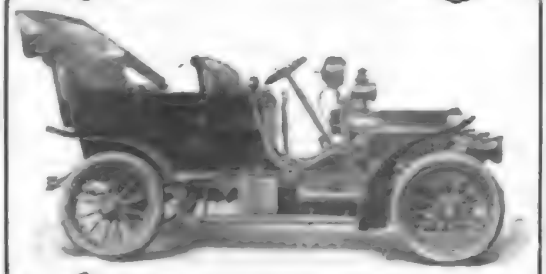
27 Thames Street, New York

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Cleveland

THE CAR OF SIMPLICITY



A Reliable Brake

is very important on an Automobile at all times; whether ascending or descending grades or running on the level.

¶ The Brakes on the CLEVELAND CAR—three—are positive in their action, and can be relied upon to perform their duty in any emergency. Any one of the three Brakes on the CLEVELAND when applied, disengages the clutch.

¶ The Emergency Brake is operated by a lever at the rights of the driver, and consists of one double-acting internal expanding bronze shoe, mounted in each of the rear hub drums.

¶ This Brake is so effective when applied, that it is possible to stop the car almost instantly.

¶ If you will send for our new Catalog, which contains full descriptive matter and illustrations, it will tell you more than the limits of an advertisement will permit.

IMMEDIATE DELIVERY 18-20 H. P. $2,800

BRING AN EXPERT WITH YOU

CLEVELAND MOTOR CAR CO.

386 Erie Street : : : : : Cleveland, Ohio

General Eastern Distributing Agent:

E. B. GALLAHER : 141 W. 55th Street, New York

Distributors:

BOSTON: Butler Motor Car Co., 998 Boylston St.
CHICAGO: The Bennett Bird Co., 1404-1406 Michigan Ave.
MILWAUKEE: E. W. Arbogast Motor Co.
SOUTHERN CALIFORNIA: Worthington Garage, Los Angeles.

Congratulations

From a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, *the latter seems to be a sure thing on some tires that we know of.*

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—*Ashville Cycle and Auto Company, Sept. 23, 1905.*

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Co.

AKRON, OHIO

New York, 506 Reade St. and 1625 Broadway
Buffalo, 732 Main St. Cleveland, 420 Superior St.
San Francisco, 302 Mission St. Chicago, 142 Lake St.
Boston, 161 Columbus Ave. Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. Denver, 1444 Curtis St.
London, E. C. Snow Hill.

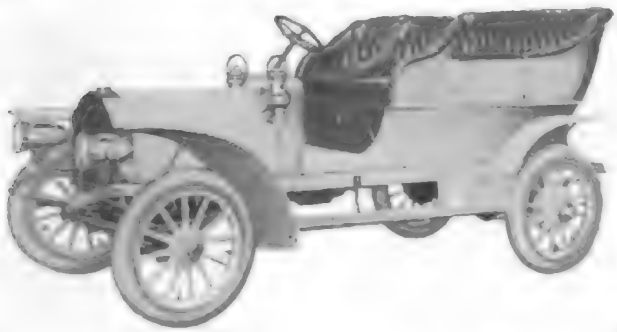
Digitized by Google

The New

Stoddard-Dayton

Model D

"AGAIN AS GOOD AS IT LOOKS"



Surrounded as we are with the best mechanics, best material and a creative force unequaled, the new **Model D** represents everything modern and right in an up-to-date automobile.

The new **Gear Shift System,** the new **Clutch Drive Axle,** the new **Transmission,** the **powerful 4½x5 Motor,** the **2100 pounds,** the **price, $2250,** these **are points of consideration.**

A FEW LIVE AGENTS WANTED IN UNOCCUPIED TERRITORY

BOOKLET READY—CATALOGUE LATER

CHICAGO: McDuffee Auto Co.
NEW YORK: Stoddard-Dayton Agency, 60th and Broadway
BOSTON: Randliff Motor Car Co.
MINNEAPOLIS: Haynes Auto Co.
INDIANAPOLIS: Frank L. Moore

Dayton Motor Car Co.

FACTORIES

DAYTON, OHIO

DEALERS

During 1905 we built and sold more than 4,000 Cadillac cars.

Not one purchaser of these cars is willing now to let his "bargain" go at less than the price he paid for it.

For 1906 that name

CADILLAC

will possess more than ever before a magic meaning to live dealers.

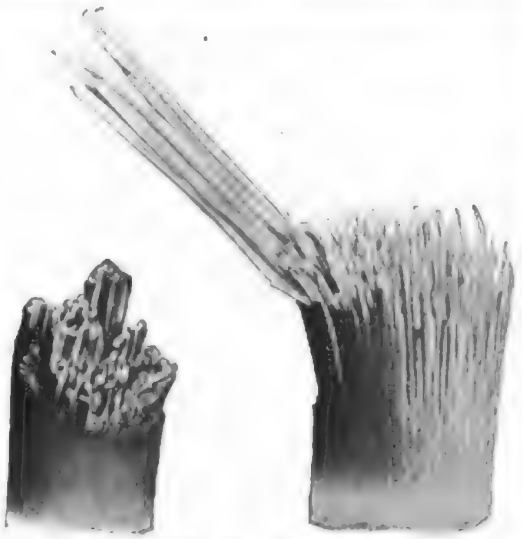
There are hundreds of towns in the U. S. where Cadillac cars have never been sold. We want an agent in each of these localities and if **you** are a **good business man,** you will at once get in touch with us. No line was ever so attractive as ours will be for 1906.

WRITE TODAY

Cadillac Automobile Co.

Detroit, Mich.

Digitized by Google



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 5

A burned tire is robbed of its danger if the car is equipped with "Imperial" wheels.

What you get for your money is of much more importance than the price you pay. Wheels which are represented as being made of selected second growth hickory may, and usually do, differ greatly in quality.

The difference is that which exists between timber selected "on the ground" and timber selected "at the factory." The material for Imperial "A" grade wheels is selected at the factory only after it has passed the most careful inspection. We own the tracts of land where it grows. The age of the timber, the time when it is felled, how long it lies, how it is corded, the period of its seasoning, the part of the tree from which it is cut, its specific gravity all the matters essential to quality are known to us and under our control.

We have the best equipped automobile wheel building plant in the country.

The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

IMPERIAL WHEEL COMPANY

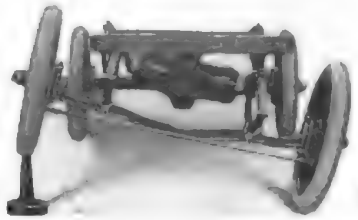
FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

THE MARMON

"A Mechanical Masterpiece"

Front Wheel Raised Over a Foot



Body Level

In a Class by Itself

Anyone can see at a glance that the Marmon is unlike other cars. And it needs but little study to show you that it is better.

For instance, its luxury of motion. When you are speeding over rough roads in a Marmon, you don't spend your time bouncing up in the air. You don't know that most of the bumps or ruts exist, you ride them as gracefully as a sailboat rides a wave.

And the same exclusive patented feature that makes this possible in the Marmon—and in no other car—is as great a blessing to the entire mechanism as it is to the passengers.

Compare any other car with a log wagon and you will find that of the two the log wagon has the better principle of construction. Its front axle is movable—providing some elasticity—and it has no costly mechanism to protect. The sole advantage of the automobile lies in its springs; but no kind or combination of springs will correct the error of an unyielding, unnatural construction. Put it to the test illustrated above.

The Marmon possesses the exclusive *patented* feature,

Double Three-Point Suspension

Solid cast aluminum body on one frame, power plant on another frame, *each frame* suspended on three *pivotal* points. Eliminates the jolts and binding, twisting strains inevitable in the rigid suspension of all other cars; and keeps the power plant and rear axle always in perfect alignment. Means fewer parts, simpler parts and less wear on all parts, tires included. Permits the use of a perfectly straight rigid shaft drive, *without Cardan joints*, delivering a greater percentage of motor power to the wheels than is done in any other car. Four cylinders; air-cooled.

The Marmon oiling system is superior to splash, gravity or any other known scheme of lubrication. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Has no uncertainties, no adjustments and is very economical.

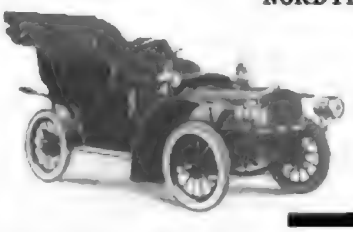
Stylish, strikingly handsome and very quiet. Replete with distinctive features that appeal instantly and forcefully to all who seek a strictly high-grade car.

Write for Booklet No. 1 and become posted on the finest car of the times.

NORDYKE & MARMON CO.

(Established 1851)

Indianapolis, Ind.



Members American Motor Car Manufacturers' Association, Chicago.

Digitized by Google

Here's a Record for You!

A 1906, 4-cylinder **HAYNES** stock Touring Car, stripped, with a racing seat on it, proved its utility by its remarkable performance in the elimination trials for the Vanderbilt cup.

Especially constructed racing monsters were completely outdistanced by the **HAYNES**.

But one stop was made during the entire race, and this through no defect in the mechanism of the machine.

Isn't this a wonderful record?

Isn't this pretty good evidence in support of our claims?

And—better still—isn't the **HAYNES** a good car to sell **because** of this evidence of endurance, speed and simplicity.

Agencies are now being contracted. Send in your application at once.

Orders for **exact duplicates** of this car are now being booked in the order of their receipt.

Write at once.

The Haynes Automobile Co.

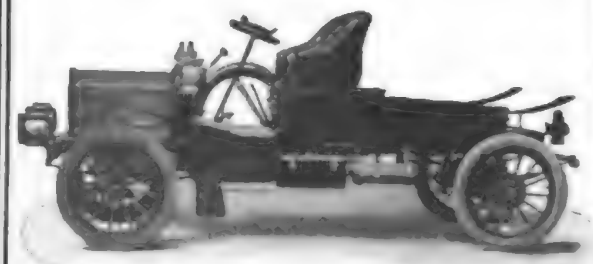
Members A. L. A. M.

CHICAGO KOKOMO, IND. NEW YORK

THE INCOMPARABLE

WHITE

THE CAR FOR SERVICE



The White Runabout

If seating capacity for two is sufficient for your needs, you would do well to inspect critically the White Runabout—our regular chassis fitted with runabout body.

It, of course, possesses all those qualities of simplicity, durability and reliability which have made the White the favorite touring car of this country. In addition, is the increased speed which results from the lessened weight. The price, furthermore, is less than that of our touring car. The White Runabout should certainly appeal strongly to those who wish a stylish, speedy and silent car.

Write for Further Details Regarding Price, Weight, Etc.

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

A RANGY LINE

1906

JACKSONS

THREE MODELS
"C," "D" AND "G"

RANGE OF PRICES
$1250, $1500, $2500

RANGE OF POWER
FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE
90" ——— 100" ——— 108"

Plenty of Style, Strength and Speed

MODEL C
2 cylinders opposed, 5¼"x5", motor under body, wheel base, 90 inches; chain drive.
Price, $1250

MODEL D
A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.
Price, $1500

MODEL G
40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.
Price, $2500

LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

A Live Line For Live Dealers : : : : : WRITE

JACKSON AUTOMOBILE CO.
JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

Regardin' Our Fine Performance
in the
Vanderbilt Cup Trials

SOME people have expressed surprise at our ability to beat out specially built racing machines with our regular stock motor car. Those of you who own Royals, or have had a ride in a Royal car, know why it was so easy for us to come in third in the race.

The Royal Tourist is built to keep on movin'—on the tour—in the race—in the city streets—she always keeps pegging along without noise, trouble, or annoyance.

We are advertised by our customers. Ask one.

ROYAL

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., 58th St. and Broadway, New York
The W. Duffee Automobile Co., 1449 Mich. Av., Chicago
Automobile Supply Co. Ltd., 24 Temperance St., Toronto
G. J. Denham, 182 Columbus Ave., Boston
G. W. Caplin, 424 So. Fifth Street, Minneapolis
Motor Shop, 217 N. Broad St., Philadelphia
Westminster Automobile Co., 4386 Olive St., St. Louis.

THE LAMBERT

Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

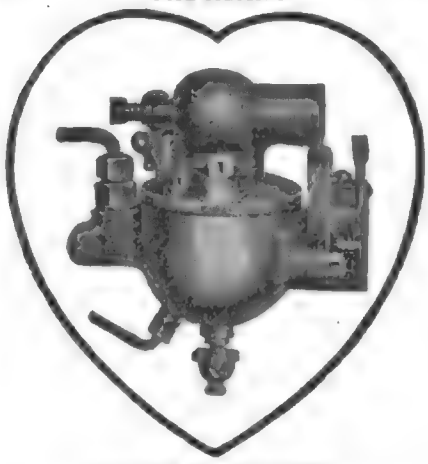
The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

Digitized by Google

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ⅛" to 3".

Schebler carbureter with balance throttle to be used with a governor.

Schebler two-cycle engine carbureters.

Schebler Special for Cadillacs.

Oldsmobile carbureters.

Ford two-cylinder carbureters.

Autocar Runabout carbureters.

Franklin Automobile carbureters.

Standard sizes for all other motors.

Special fittings for attaching the Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

LIST OF AGENCIES.

P. J. Dasey.....431 Wabash Ave., Chicago, Ill. Factory Rep.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, Rhode Island
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Elec. Supply Co.....Washington, D. C.
Automobile Equipment Co.....Detroit, Mich.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station....3425 N. Broad St., Phila., Pa.
Auto Supply Agency.....3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co.....New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chanslor & Lyon Motor Supply Co.....
.....303 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Nell & Co.....38 Fenchurch St., London, England.

A SUMMARY of TIRE RESULTS in the Vanderbilt Cup Race

Of the four sets of tires which finished the Vanderbilt Cup Race only *one set* ran the entire ten rounds *without change, without injury*, and without attention in any way.

These were the Diamond Wrapped Treads on the *Locomobile* driven by *Joseph Tracy*. At the end of the race their condition was perfect.

Four foreign cars discontinued the race because of tire trouble, and it is everywhere conceded that tire trouble cost Lancia first position. The equipment on these five cars represented the three best known European and English makes of tires.

Diamond Wrapped Tread Tires

Contributed to the aggregate of all tire trouble in the race from 50 per cent to 600 per cent less than any other make of tire represented, and this notwithstanding that with one exception they outnumbered every other make of tires used.

All five of the American cars were equipped with Diamond Tires. On four there was no tire trouble whatever. The total of all tire trouble suffered by American cars was two casings changed and one new tube put in, due to puncture.

On the Christie car, which never before participated in a race without serious tire trouble, and which never before ran on Diamond Tires, the record was perfect. Even the wheel-smashing collision which this car suffered did not injure the tires.

Only five cars participating in the race escaped without changes of tires being made. Four of them used Diamond Wrapped Treads.

In short, the remarkable record for both endurance and speed made by Diamond Tires in the Vanderbilt Eliminations, and in the Gordon Bennett race, were in every way confirmed by their performance in the great contest of October 14th.

There can be but one conclusion—Diamond 1906 Wrapped Tread Tires are without an equal in the world.

The Diamond Rubber Co.

AKRON, OHIO

Digitized by Google

The Hartford Perfected Dunlop Tire

Paris, July 28, '05.

Dear Sirs:-

We have arrived in Paris coming over the Route Nationale from Aix les Bains via Lyons and Nevers. The roads were exceedingly trying, very hard and a lot of "pave" or cobblestones. I had two punctures. These were the only mishaps in 2136 miles and the tires have stood the hard work without showing any other signs of wear and tear. People here consider this a very good record as many of the best foreign tires blow out from the heat.

Yours truly,

Walter Hale

Postal No. 3.

Watch for others to follow.

The Hartford Rubber Works Company, Hartford, Conn.

Will you write us about the

1906 Agency for the Wayne?

The Wayne Agency for 1906 is a good thing. The Wayne Cars were extensively advertised last year in all the leading magazines and trade papers. For 1906 we have made arrangements for a campaign of cooperation with our local agents which will mean practical assistance in selling Wayne Cars. We realize that to get good agents it is necessary for the agent to have a proposition on which he can make money, and the Wayne agency proposition is one which it will pay you to investigate.

The Wayne line for 1906 is comprised of cars that have proved their ability to stand hard usage by three years' road service.

We have not changed the Wayne principle of construction because nobody has yet been able to show us anything better tho' our cars contain all new improvements and are strictly up-to-date (no old models built over).

WRITE US AND FIND OUT WHAT WE HAVE TO OFFER, BEFORE YOU FORGET

WAYNE AUTOMOBILE CO. - Detroit, Mich.

Digitized by Google

Business and the Oldsmobile

The development of the Oldsmobile as a public utility has been steady and uninterrupted.

The Oldsmobile Standard Runabout meets the requirements of the business and professional man, the rural delivery carrier, the commercial traveler, and is an indispensable adjunct to modern life.

The Commercial Vehicle has reached the highest development in the Oldsmobile.

You will find in our line the vehicle which most fully meets your requirements, whether for city or country delivery, light trucking, city or rural transportation, depot or park service.

Write us for full information and details. There is big money to be made with our commercial cars and it will pay you to get in the game early.

Ask for Circular 52.

OLDS MOTOR WORKS

Member Association Licensed Automobile Manufacturers

Lansing, Mich., U.S.A.

Digitized by Google

Compound MOTOR CARS

1906 MODELS Now Ready for Demonstration

All Valves Interchangeable.

Positive Lubrication by Mechanical Force Feed Oiler.

Hand Forged Crank Shaft ground to size.

12-15 H. P. Compound Motor.

Aluminum Body.

Sliding Gear Transmission, Three Speeds Forward and Reverse.

Can be furnished with either Shaft or Double Chain Drive.

EQUIPPED WITH TOP AND HEADLIGHTS, $1550

We should be pleased to refer anyone to many satisfied customers who are daily using Compounds
Testimonials will appear from time to time in future advertisements

THE E. H. V. CO. : : Middletown, Conn.

PENNSYLVANIA CLINCHER

There are no perfect Motor Cars, nor any perfect tires—as yet;

But if you have a car which you consider almost perfect, perhaps you would like a tire fit to associate with it.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

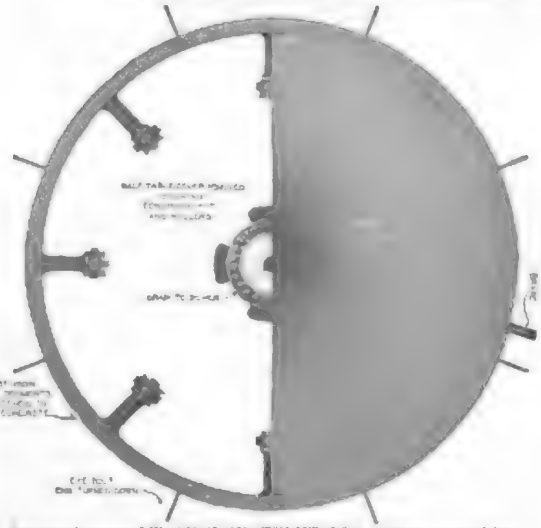
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

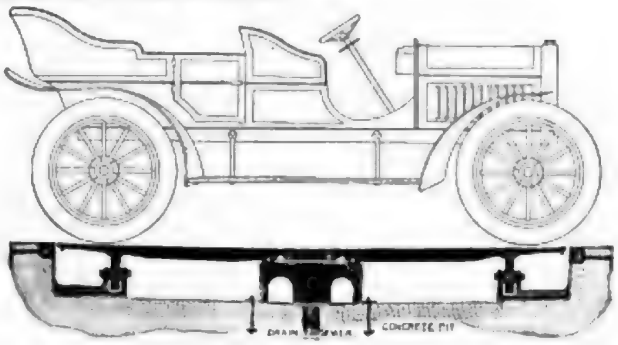
It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.





Sectional views of WASHSTAND TURNTABLE. Patent applied for.

LINK-BELT Machinery Co.

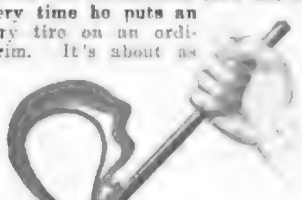
CHICAGO

Why Goodyear Auto Tires Won't Creep

DID you ever try to force an inch tube over an inch and a quarter bar—or to put a pair of No. 7 gloves on a No. 8 hand?

You wouldn't be so foolish, would you?

But that's to all intents and purposes what the Automobile Man has to do every time he puts an ordinary tire on an ordinary rim. It's about as



hard work as breaking into a bank, and he goes at it the same way, with a "jimmy" and other burglar's tools. Because a 26-inch wheel (for example) is really *27 inches* in diameter, when you consider the flange. So a 26-inch tire has to be forced over a 27-inch rim every time you put on a tire, or take it off.

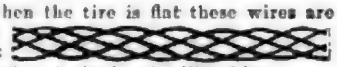
It's a heart breaking job, even for a strong man, and it takes from half an hour to an hour each time you do it.

And after you have removed such a tire a few times, the base of the tire becomes stretched, and the fabric (used to strengthen it) becomes broken in places, until this tire becomes 27 inches in diameter instead of 26, a full inch larger than the face of your wheel. So you have to bolt it down, or it will creep, tear the valve out and cause all kinds of trouble. And even then you have to keep it pumped up continually as hard as it will stand.

Now the Goodyear Detachable Auto Tire can't creep, because, in the first place, it doesn't have to be *forced* on (if you use the Goodyear Universal Rim). The 26-inch tire slides right on to the 26-inch rim as easily as you would put on your hat. It doesn't have to be pried over a 27-inch flange.

And next, at the first stroke of the pump, the tire begins to grip the rim like grim death. Because there is a mesh or tape of piano wire vulcanized clear around the tire on each side of the base.

When the tire is flat these wires are like this:



And each single wire like this:

The instant you begin to pump, this wire begins to shorten like this:

And when the tire is pumped up hard, the wire mesh is like this:

If you put a Goodyear Auto Tire on a wood rim, and pump it up hard, the pressure will be so great that the base will squeeze a ridge in the wood.

So the Goodyear Auto Tire need be only *half* inflated, and it will still have a firmer grip on the rim than it is possible to secure with plates and bolts.

This, however, is only *just one* of the good points of this trouble-saving tire.

You will find other points in our "Good News Book." It is vitally interesting to every manufacturer, dealer or user, for it shows the way to perfect relief from Tire Troubles. It's FREE. Ask for it.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, Akron, Ohio.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; Denver, 220 Sixteenth St.; and Detroit, 242 Jefferson St.

Digitized by Google

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

24 h. p. Berg Touring Car

IMMEDIATE DELIVERY MEMBERS A. L. A. M.

Michelin

Another victory for Michelin Tires.

Lancia's wonderful record on the Fiat Car equipped with Michelin Tires was one of the features of the Vanderbilt Cup Race.

Michelin Tires finished second and fourth.

All cars equipped with Michelin Tires were free from tire trouble.

Lancia going at the rate of 100 miles an hour over a bumpy road, proves without a doubt the Reliability, Stability and Safety of Michelin Tires.

Heath did not touch his tires from start to finish.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET
NEW YORK

E. D. WINANS, Gen'l Mgr. Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

Digitized by Google

Are YOU a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date. There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season.

We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

FORD MOTOR COMPANY :: Detroit, Michigan

Members American Motor Car Manufacturers' Association, Chicago.

Canadian Trade supplied by THE FORD MOTOR CO. OF CANADA, Ltd., Walkerville, Ont.

"Firestone"
Side-Wire Tires
are used on nine-tenths of all the commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by hard experience that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.
Firestone Tires wear like iron. They hold their shape; they give satisfaction.
Then why not "Firestone?"
Firestone Tire and Rubber Co., Akron, Ohio
New York Chicago Philadelphia Boston St. Louis
San Francisco Los Angeles

Digitized by Google

SEARCHLIGHT SWINDLERS

The success of the Rushmore Lens Mirror Searchlight has been so complete that as a matter of course the lantern makers have been compelled to either try to imitate it or go out of business.

A number of them have conspired to keep us out of the automobile shows, have claimed that we do not make the celebrated Rushmore Lens Mirror and that they get their cheap flat lenses from the same place, and have resorted to every contemptible trick to deceive people into buying their trash.

Certain so-called jobbers have tried to push the sale of the imitation lights by issuing lists of what are insinuated to be our prices in comparison with their alleged cheap prices. The statement that we ask the prices quoted is a deliberate and malicious lie. The prices they offer are but a few cents lower than ours, while the fake lights they offer are by comparison not worth their weight as junk.

Some of the fake jobbers refuse to furnish the Rushmore light when requested to do so on the plea that we cannot make delivery. That statement is likewise a deliberate lie. They offer to refund your money if not as represented, but you had better hold on to your cash.

We do not ask any money in advance, but will send the Searchlight on ten days' free trial to anyone worthy of credit. The fake jobber can make but 25 per cent to 30 per cent on the Rushmore, while he clears 100 per cent to 200 per cent on the fake lights which he obtains on consignment. Do you wonder that he is willing to cheat you?

Our prices are the lowest for the quality and we ship from stock.

RUSHMORE DYNAMO WORKS, = Plainfield, N. J.

G&J

MOTOR CAR TIRES

The Most Serviceable Tires Made

No Internal Heating. The thread fabric construction makes the tire so pliable that it changes position in service with the least possible resistance, which means that the tires are very resilient, fast and free from internal heating.

No Pinched Tubes. The tire is fitted with a flap, which prevents the tube from coming in contact with the rim, or from getting under the edges of the case, preventing pinched tubes.

No Creeping. The flap forms a strong frictional contact with the edges of the clinches, holding the edges firmly to the rim for its entire circumference, so that it is impossible for the tire to creep.

G&J TIRE CO.

Boston Buffalo Cleveland Detroit INDIANAPOLIS Chicago Denver San Francisco

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Classification Distinctive...WHY?

The Lightest, the Strongest, Most Durable, Most Efficient, Best Finished. Attractive in Rich Finish and Design, Simply Manipulated.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

THE BAKER ELECTRIC

SEND FOR OUR BK CATALOG

THE BAKER MOTOR VEHICLE CO. Cleveland, Ohio

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.

TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in Principal Cities.

New York Agents: MAXWELL-BRISCO, INC.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Digitized by Google

Bargain hunters in the automobile industry usually get what they are looking for—*trouble.* The wise autoist buys

CONTINENTAL TIRES

and avoids annoyance. Then he tells his friends about it and that is what creates Continental enthusiasts. Have you our "Care & Repair" Book?

Department M. A.

THE CONTINENTAL CAOUTCHOUC CO.

EMIL GROSSMAN, Gen'l Mgr. 43 WARREN ST., NEW YORK

Factory, HANOVER, GERMANY

KINGSTON

1906 TYPE-K- AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,

KOKOMO, INDIANA, U. S. A.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces **two impulses every time the flywheel turns.** As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR
STEERING GEAR
CLUTCH
DISTANCE ROD AND BRACKET
PROPELLER SHAFT
LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for Circular No. 12.

THE GARFORD COMPANY, ELYRIA, OHIO

Sales Manager: HAYDEN EAMES, Cleveland, Ohio

No better Top at any price than ours at $75. Write for Top Catalog

TOPS

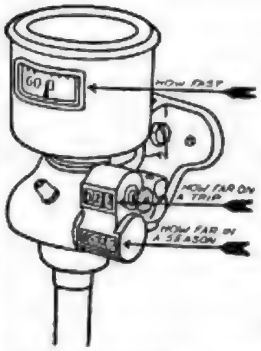
The Automobile Equipment Co.

252 Jefferson Avenue
DETROIT, MICH.

Price, complete, crated, and all ready to attach,

$75 F. O. B. Detroit. Front Straps or Side Brackets, Steel Bow Sockets, Enameled or Leather Covered, as specified.

Digitized by Google



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

DANGER AHEAD!

Old Faithful

Will, with any good lamp, search out every obstruction and hole in the road. You are safe at night with the

PREST-O-LITE GAS TANK

It never leaks, freezes, gets out of order or fails in any respect. Steady supply of pure, cool gas always ready.

Detroit, Mich., July 27, 1905.

Prest-O-Lite Gas Tank Co.,
Indianapolis, Ind.

Gentlemen:
I am sending you, as I promised, a copy of the photograph taken at Coldwater, Michigan, of the new "24" test car. You will notice "old faithful" on the right-hand running board. These tanks of yours are certainly wonderful for their great convenience on trips like this, and, in fact, for general touring. We have equipped a large number of cars with them, and are using them on factory cars without having discovered any disadvantage whatever. Trusting that the picture enclosed will reach you in good condition, I am,

Yours truly,
PACKARD MOTOR CAR COMPANY.

To be had of all dealers. Empty tank exchanged for full one by any dealer.

PREST-O-LITE COMPANY
(INDIANAPOLIS)
AGENTS IN ALL CITIES

Price Complete **$35**

Exclusive Licensees under patents of the Commercial Acetylene Co.

TANK RECHARGED AT SMALL EXPENSE BY ANY DEALER

The Care *of the* Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

Mobo, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

MOBO

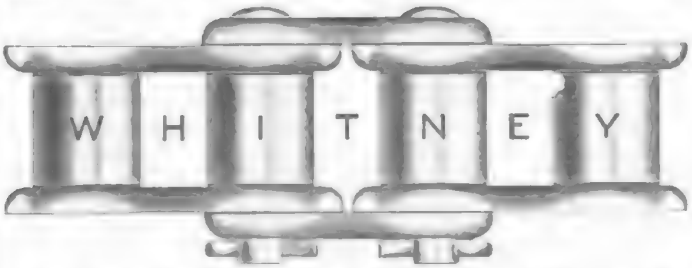
is unlike common soap, as it positively contains no free alkali. Being a preservative as well as a cleanser, it prevents varnish or paint from peeling or cracking, and adds a fine gloss to the surface

Mobo may be used with profit on leather goods, harness or woolen fabrics. Cannot harm the most sensitive skin, as it is a purely vegetable oil preparation and absolutely contains no free alkali. Put up in 2-lb. and 8-lb. cans; also in tubs, half barrels and barrels.

If your supply man does not keep *Mobo*, send us his name and address, and we will see your wants are supplied.

JOHN T. STANLEY
New York.

1906 Model "WHITNEY" Detachable Roller Chain—Patented



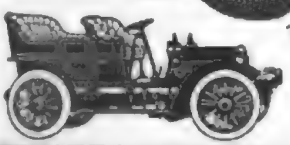
THE WHITNEY MFG. CO., Hartford, Conn.

"Whitney" Standards for dimensions of Roller Chains have been adopted by most of the leading American automobile builders, and at last they have been accepted by other chain makers at home and abroad. For 1906 Model Cars of all styles and weights, six sizes of chain can take the place of over thirty sizes used in the past.

Watch the cars with the efficient Double Chain Drive, and equipped with the latest Model Noiseless "WHITNEY" Chains.

Digitized by Google

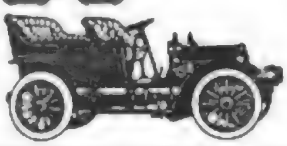
Locomobile



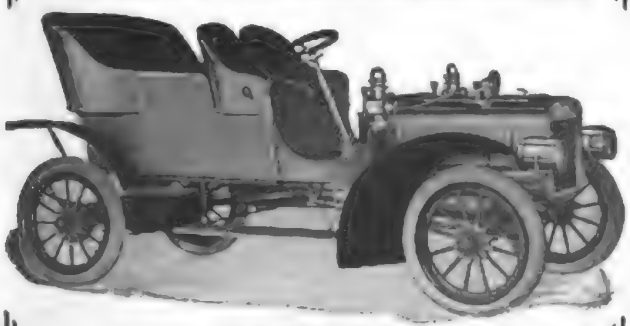
The *Locomobile* Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St. BOSTON, 15 Berkeley St
PHILADELPHIA, 240 N. Broad St. CHICAGO, 1354 Michigan Ave



MOLINE



18-20 HORSE POWER

Model "B"—$1,600

Four cylinder vertical motor that develops more than the rated H. P. Pulls through heavy roads and up hills in a way that surprises the owners of higher-priced cars.
Has all the good features of most $2,000 machines and costs $1,600.

For the first time this season we can make immediate deliveries

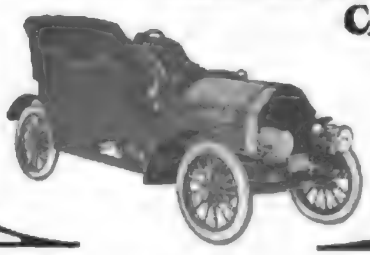
We have only a few of them left and they will go quickly. Perhaps our proposition might interest you.
Model "D"—Our stock of these substantial 12 H. P. Touring Runabouts is decidedly limited. The price we are making is closing them out fast.
If you want one, speak quick.

Moline Automobile Company

EAST MOLINE, ILLINOIS

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the Best Materials Obtainable

THE SIMPLEST GASOLENE CAR IN THE WORLD

—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction"

40-45 Horse Power, $5,000

CORWIN MANUFACTURING COMPANY

PEABODY, MASS., U. S. A.

POPE Waverley ELECTRIC AUTOMOBILES

The dull season made profitable for the agent by the sale of POPE-WAVERLEY ELECTRICS

Do you realize how much extra money you can make by pushing the sale of Electric Automobiles? The Pope-Waverley Station Wagon and the Coupe-Top Chelsea are so particularly adapted for fall and winter use that it is only necessary to bring their good points to the attention of the people to secure profitable customers.

We can make prompt deliveries on these models and will be glad to have you visit our Indianapolis factory and see the reason for our enthusiasm on the future of the Electric carriage. We make 15 distinct models, $850 to $2,750.

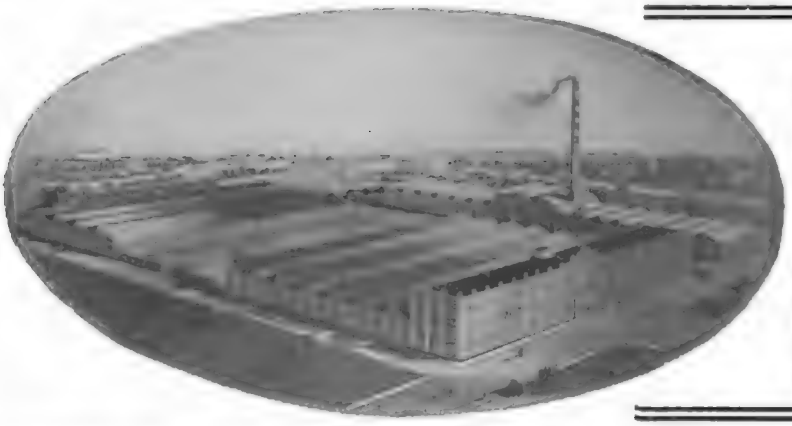
New York City, 1733 Broadway
Boston, Mass., 223 Columbus Ave
Providence, R. I., 55 Snow Street
Washington, D. C., 819 14th Street
San Francisco, Cal., 458 Mission Street

Pope Motor Car Company

INDIANAPOLIS, IND.

COUPE-TOP CHELSEA
Price $1450

Digitized by Google



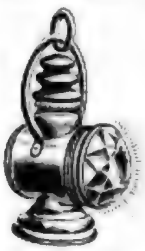
The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

Latest European Novelties

RACING CAR No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.



No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER
Manufacturer, Jobber, Exporter and Importer
Home Office, 97-99-101 Reade St., New York City
BRANCHES
Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

HAVE YOU SEEN THE NEW **KOKOMO** MECHANICALLY - ATTACHED
AUTOMOBILE TIRE?

It is just what you have been looking for.

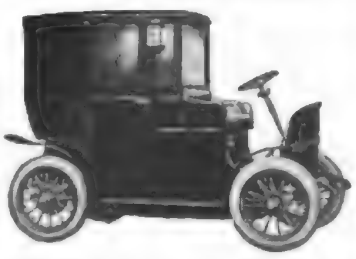
Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

Digitized by Google

Columbia

Electric
Town Carriages
NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.
With same Chassis we supply Landaulet, Hansom and Victoria Bodies.
Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

National
Motor Cars

In two new models improved and better than ever will be ready very shortly.

We have a surprise to offer which will make EVERYBODY

"Watch for the Round Radiator"

National Motor Vehicle Co.
1006 East 22d Street
INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.

A TIMELY WORD TO
DEALERS

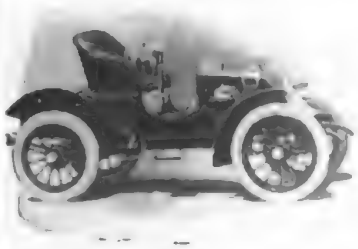
THE Model A GALE $500
Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.

ADAMS-FARWELL
THE "REVOLVING-MOTOR" CAR



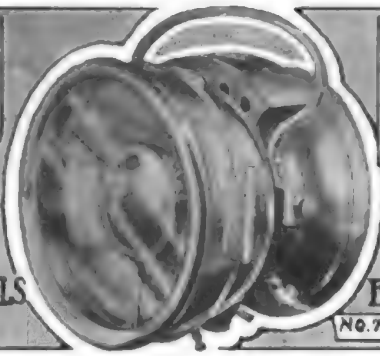
Our System is no longer an experiment, as our cars are now being operated every day by satisfied customers. In proof of this let us send you copies of letters received from owners of 1904 and 1905 models.

Three and five Cylinders—20-25 and 40-45 Horsepower
Six Models $2,000 to $4,000—Highest Grade Only
No Water : No Radiator : No Fly-wheel : No Muffler : No Fan : Automatically Governed

CHICAGO SALESROOM: 1536 MICHIGAN AVE.
THE ADAMS COMPANY :: Dubuque, Iowa, U. S. A.

Digitized by Google

E & J LAMPS



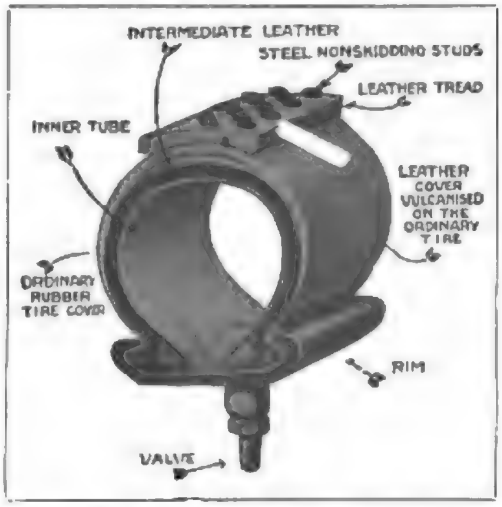
GAS HEADLIGHTS

OIL SIDE LIGHTS

CATALOGUE OF LATEST MODELS SENT ON REQUEST

EDMUNDS & JONES MFG. CO.
NO. 72. A. DETROIT MICH. U.S.A.

SAMSON
LEATHER TIRE
NON-SKIDDING :: :: PUNCTURE PROOF



A. E. GALLIEN, Manager

UNITED STATES BRANCHES:

New York: 12 West 33d Street
Chicago: 1461 Michigan Boulevard
Boston: 20 Park Square
Philadelphia: 1120 Chestnut Street

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

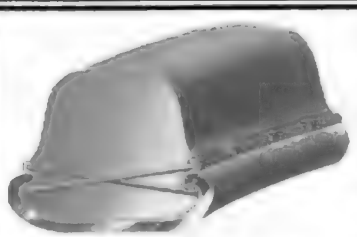
TRY IT TO-DAY

25 Pound Pail $1.15

60 Pound Tub $2.50

Or in Barrels

HOFFHEIMER SOAP CO.
CHICAGO



Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types
and made to fit any standard clincher rim in which pneumatic tires are used

OBSERVE THE FASTENING DEVICE

Tire Fastener for Ordinary Work

RESILIENT AND "THERE WITH THE WEAR"

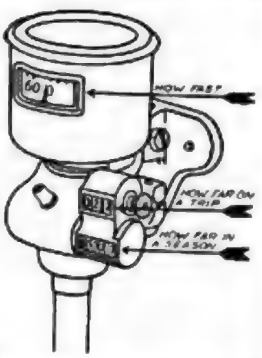
The Motz Clincher Tire & Rubber Co.
AKRON, OHIO, U. S. A.

Digitized by Google

THE AUTO-METER "BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy



The Speed Dial, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The Trip Dial records the distance traveled on a trip or for a day.
The Season Dial records the total distance covered in a season.
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1890 Broadway, New York City, N. Y.
Warner Instrument Co., 304 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

FIREPROOF

PORTABLE

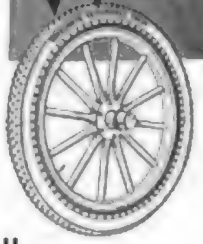
AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co
107 West Monroe St. :: Chicago, Ill.

WOODWORTH DETACHABLE TREAD



For Automobile Tires

Is the proper equipment for fall and winter use. prevents slipping and skidding on muddy or icy streets. It also protects the tires from hard, frozen roads. The treads can be put on without removing the tires from the wheels. They are held rigidly on the tires by side-wires which pass through the loops and are tightened by small nuts. No special tools or equipment are required to apply them—with a wrench and a pair of pliers anyone of ordinary ability can do the work.

Can be used on any pneumatic tire, no matter how badly worn, if it is strong enough to stand the air pressure.

You will need something for use for this fall and winter. Why not get the best thing there is?

They are not exorbitant in price.

WRITE FOR CIRCULAR, GIVING DESCRIPTION AND PRICES

LEATHER TIRE GOODS CO.
NEWTON UPPER FALLS, MASSACHUSETTS

TOPS

should be just as carefully designed and fitted as any other parts of the car. **"ANY OLD TOP"** *won't do.* Equip with the **LONDON TOP** and secure the best that skilled top makers and the best of materials can produce.

LONDON TOPS, made to fit any car, fit guaranteed. Prices, samples of materials and full description promptly mailed on request.

Lamp Covers *Slip Covers*
Tire Covers *Engine Aprons*

London Auto Supply Co.
1229 Michigan Avenue CHICAGO

Digitized by Google

Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in ..... will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then .....

WILKES-BARRÉ, PA.

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

SOOTLESS
A NEW SOOT PROOF
MICA SPARK PLUG

Indestructible
No Asbestos Packing to leak and get out of order.

Double Explosion Chamber
A new and valuable feature.

Strongest Plug Made
All Threads.

Never Breaks
which makes all other so-called Soot Proof Plugs very expensive and nearly useless.

Extra heavy lengthwise Mica Insulation.

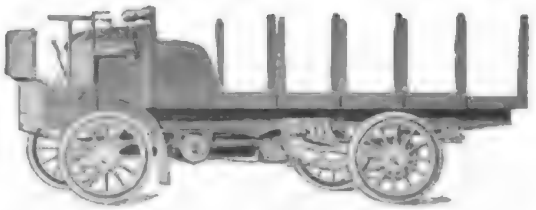
Doubly Protected on Engine End.

Guaranteed Six Months

Price, $1.75

Manufactured by
THE OAKES & DOW CO. 40 Sudbury St. Boston, Mass.
EXCELSIOR SUPPLY CO., Chicago, Ill., Western Agents

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

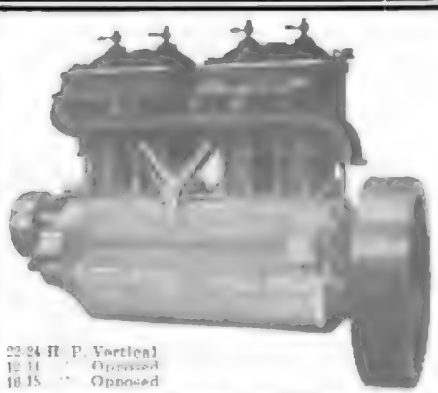
CARRYING CAPACITY, 6,000 LBS.
Cylinders Air Cooled Speed 12 Miles Per Hour
Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.
Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.



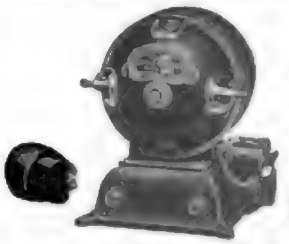
22-24 H. P. Vertical
18-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR
BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google



THE AMERICAN
LITTLE WONDER DYNAMO

Has system of storage in the base; requires no other batteries for starting. If you desire a first-class machine at a low price, be sure and get the LITTLE WONDER.

AMERICAN COIL CO., Foxboro, Mass.

WRITE FOR 1905 CATALOGUE

Auto Supply Co., 1482 Broadway, New York Agts. Geo. H. Hill, 246 McAllister St., San Francisco, Cal.

Soot Proof

the spark plug that is positively soot proof.

It has two air-gaps, tight joints, perfect nickel steel sparking points, on which oil can never remain fixed, and

"The Spark Always Jumps."

At your dealer's or by mail, postpaid.
$2. Refuse imitations.

Send for free treatise on how to correct and avoid troubles to electrical equipment of gasoline motor cars.

C. A. MEZGER, 203 West 80th Street, New York

Monogram Oils

....Made by....

Columbia Lubricants Co. of New York

78 Broad Street, New York City

"FIRST AID TO AUTOMOBILES"

DISTRIBUTING DEPOTS

....Also at....

Boston Cleveland Washington Chicago
Denver San Francisco and Toronto, Canada

Weak Batteries

never bother the owner of an

Apple Automatic Sparker

It is a perfect storage battery charger, easily applied to any automobile, launch or stationary engine. It makes troubles from exhausted batteries a thing of the past, and insures a hot, steady spark with plenty of speed and power at all times.

Automobile owners should insist on an Apple Electrical Equipment for their machine. That means correct ness at all points. Write for further information

THE Apple Automatic Sparker

Dayton Electrical Mfg. Co.

75 Beaver Bldg. DAYTON, O.

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

COLUMBIA SEARCHLIGHTS and GENERATORS

Guaranteed to be better than most, and as good, if not better, than any

Model No. 1—5 in. Mirror Lens, 6 in. Opening
Model No. 2—6 in. Mirror Lens, 7 in. Opening
With Adjustable Burners

WRITE US

Generator No. 2—Capacity 32 oz. Will supply from one to four Burners. Equipped with a Condenser.

HINE-WATT MFG. CO., 58-60 Wabash Avenue, Chicago

HIGHEST GRADE ONLY

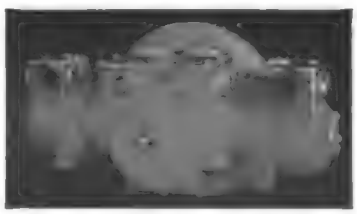
Aluminum Castings

THE ALLYNE BRASS FOUNDRY CO.

CLEVELAND AND DETROIT

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

Digitized by Google

U. S. Patents Pending.
Patented in England, France and Belgium

THE WHITLOCK COOLER

Tested and Adopted by

90 Per Cent

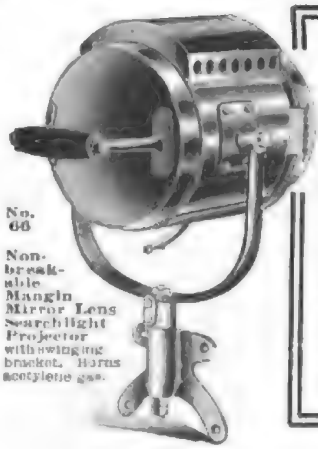
of the Leading Manufacturers of

HIGH GRADE CARS FOR 1903-1904-1905

Any Design or Style of Cooler Made to Order

THE WHITLOCK COIL PIPE CO.

Hartford - Conn.



No. 66

Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The Neverout

Mirror Lens Searchlight

is strongly built throughout and is amply reinforced where the greatest strength is needed.

The same inventive genius that produced this searchlight is responsible for the new *Neverout*

patent safety gas producer

Makes gas only as needed—no gas confined under pressure, no danger of explosion. Keeps carbide intact for months and is easily cleaned and recharged.

Write for free illustrated catalogue.

ROSE MFG. CO., 912 Arch St., Philadelphia

LATEST TYPE **WILLARD** LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company

Cleveland, Ohio

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.

THEY MAKE BAD ROADS GOOD

WEED CHAIN TIRE GRIP CO.

SEND FOR BOOKLET "C"

28 MOORE ST. NEW YORK CITY.

MOTORS—All Commercial Sizes

CONTINENTAL ENGINE CO.

NEW OFFICE AND FACTORY

Cor. Kingsbury and Huron Sts.

CHICAGO, ILL.

1½-40 h. p. 2 and 4 cycle.

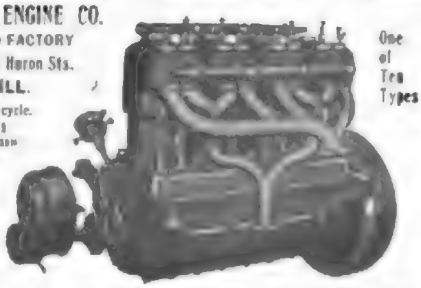
Designs and Specifications From us are up to date and money savers

SPECIAL SHOP WORK

Inspection and Testing Experts

Transmissions, Reverse Gears, Marine Outfits

Telephone North 1607



One of Ten Types

Type B—3¾ x 4½ Engine

Veeder

ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade

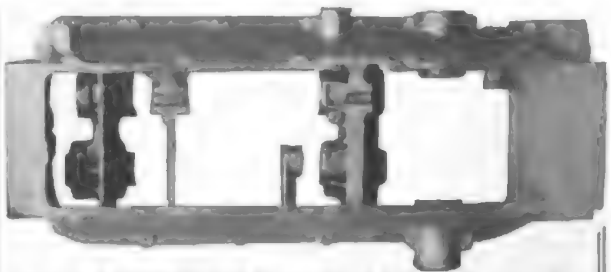
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.

S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE,
but cannot cut the journal.

In ordering Phosphor Bronze Castings note adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA



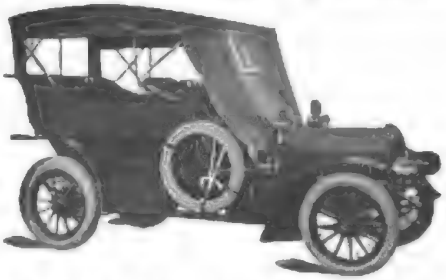
PARSONS' MANGANESE BRONZE TRANSMISSION CASE CASTING

We have already furnished over 400 of these castings for the 1906 Cars of the Locomobile Company.

The Wm. Cramp & Sons Ship and Engine Building Co., *Philadelphia, Pa.*

Digitized by Google

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

IMPERIAL WIXON
Compound Air Pump

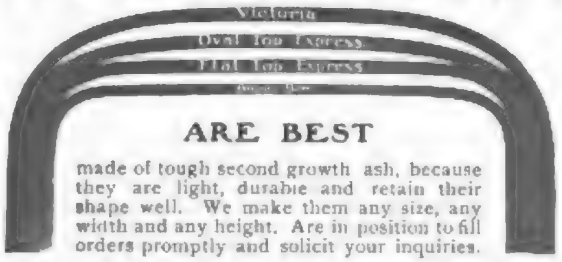
The pump with the largest capacity.
The easiest pump to pump.
The best pump for automobilists.
You need not buy it until you have tried it.
It saves tire troubles.

$5.00 ON APPROVAL

Ask any dealer or write us. Do it now.

THE IMPERIAL BRASS MFG. CO.
249 S. Jefferson Street, CHICAGO
Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

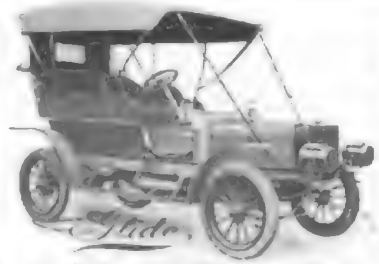
Automobile Bows



ARE BEST

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio



Model E, 30 H. P. Glide, Vertical Four Cylinder Motor

1906 MODELS
Now Ready

Model E is a 30 H. P. vertical four cylinder car with bevel gear drive.

Model F is an 18 H. P. two cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS
The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.

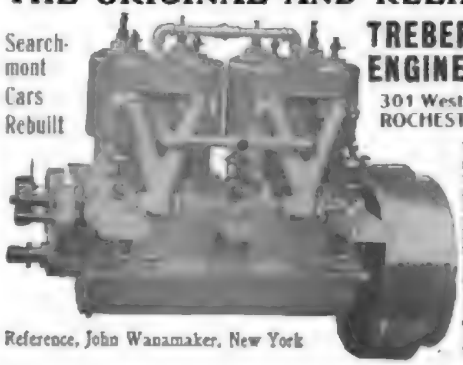
1905 · VESTA · 1905
Ignition Battery

4 Volt, 60 Amp. hours
9¼x3⅝x8⅝. Price, $18.00
6 Volt, 80 Amp. hours
9¼x5⅝x8⅝. Price, $27.00
8 Volt, 80 Amp. hours
9¼x7x8⅝. Price, $36.00

Satisfaction Guaranteed by
VESTA ACCUMULATOR CO.
1336 Michigan Avenue, CHICAGO
Phone South 262
Eastern Agents, THE R. F. HAIGHT CO.
225 W. Broadway, New York

THE ORIGINAL AND RELIABLE
TREBERT GAS ENGINE CO.
301 West Main St.
ROCHESTER, N.Y.

Searchmont Cars Rebuilt



Up-to-date Engines, Transmission Gears and Clutches. Equal to the very latest French production: air and water cooled motors. Air, 1 to 4 cyl., 2 to 15 h. p. Water-cooled Motors, 1 to 8 cyl., 10 to 45 h. p.

Reference, John Wanamaker, New York

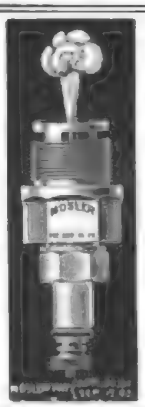
Half-Tones .:. Etchings
Original Photographs and Drawings

published from time to time

IN MOTOR AGE
ARE FOR SALE

Price for Half-Tones and Etchings, uniformly 10 cents per square inch, with a One Dollar minimum charge. Price for Photos and Drawings on application.

MOTOR AGE, 1505 Michigan Avenue, CHICAGO



MOSLER "SPIT-FIRE" PLUGS
THEY ACTUALLY "SPIT-FIRE" while OTHERS SPARK ONLY

BASE { Facilitates Sparking. Makes Plugs Spit-Fire
Acts as Condenser of Electricity.
Protects Insulation and Sparking Points.

Standard Size, $1.50, Postpaid. Special, $2.00

With Patented Protector, $1.50 additional
Used by the Leading Manufacturers
Insist upon Name and Patent Dates
BEWARE of Valueless Imitations

The Mosler Timer
is constructed on a Scientific Basis

WRITE FOR LIBERAL DISCOUNTS

A. R. MOSLER 1679 Broadway New York

Digitized by Google

A New Era in Carbureters

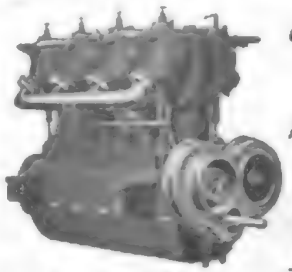
THE GARLLUS AUTOMATIC CARBURETER is a perfectly automatic carbureter, without a float, without compensater, easy to start, sure to run. So simple it cannot get out of order. Greatest economy. Highest efficiency. An easy starter on four cylinder engines. Money refunded if not satisfactory.

The Goddard Machine Co., Holyoke, Mass. says: "The GARLLUS CARBURETER gives a 10 per cent higher efficiency than any carburetor we have tried, producing in a test two h. p. more than the ..... and one h. p. more than the..... We believe in it thoroughly." (These were two prominent float feed carburetors.

For further particulars address

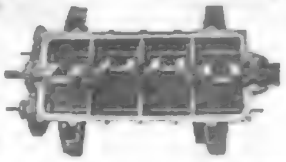
THE WINKLEY COMPANY, P. O. Box 243, Detroit, Mich.

"Aster" Motors



From 1 to 60 H. P.

Automobile Motors
Marine Motors
Electric Groups
Stationary

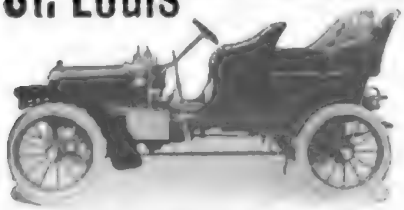


Gas, Gasoline and Kerosene

A. J. MEYERS, Manager

Office, 1659 Broadway, New York

St. Louis 18-22 30-34 Actual H.P.



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.

PROSPECT HEIGHTS PEORIA, ILL.

The IGNITION PROBLEM is SOLVED

In the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No BATTERIES. No COIL. No COMMUTATOR.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 30th St., N.Y.

If You Are a Judge of Good Plugs

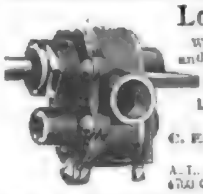
so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS Spark Plugs

are the perfection of ignition. Mica (Pings) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Door Battery Connections free with 2 Plugs. Foils guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

Lobee Gear Pump



Well adapted for Oldsmobile and other makes. We fit with any type of radiator. Easily attached. Write for prices.

LOBEE PUMP CO.,
340 Terrace, Buffalo, N. Y.

C. E. Miller, Agent,
71 Reade St., New York

A. L. Dyke Automobile Supply Co.
6700 Olive St., St. Louis, Mo.

REST YOUR TIRES with the "Springfield" Auto Lift

Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DAY & CO., Pacific Coast Agents, San Francisco

THE SHAWVER CO., Springfield, O.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort*, and *one twist* cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it *drops* out of its holder, and the gaskets of copper *drop* with it. No digging.

It is *nickeled* inside and out. *Highly polished* and *dust-proof*. Sparks between *two adjustable* points and not between *one* point and the *shell*. Its points are *perfected*.

Porcelains are *hand turned* and so perfectly glazed that soot cannot *stick* to them. Their *threads* are cut to perfection, and every particle of the idea of cheapness is left out of them. Can you think of a way to improve them regardless of cost?

Postpaid, Anywhere, $2. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

DIXON'S GRAPHITE Motor Lubricants

Graphite for the Motor

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.
Jersey City, N. J.

E. F. LESTER, Mf'r.

ALUMINUM
ARROW BRAND
SOLDER AND FLUX

FAYETTEVILLE, N. Y.

For Bolted Down Information About

AUTOMOBILES & WELCH CARS

In general In particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.
Factory, Pontiac, Mich.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation. Compression End. Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

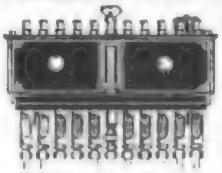
"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.
30 Cortlandt Street New York City

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler, instantly converted into a gravity FEED. Each sight feed is itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1263 Michigan Ave., CHICAGO, ILL. Tel. South 1281
ST. LOUIS, MO.

ATWOOD "STAY-LIT" LAMPS ARE THE BEST

ATWOOD MFG. CO., Makers

Send for Catalogue Amesbury, Mass.

Digitized by Google

BRISCOE MFG CO.

OLDEST AND LARGEST MAKERS OF

AUTOMOBILE RADIATORS

DURING the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000 of our radiators are now cooling automobile engines.

Our standard honey comb radiators are of true cellular construction, allowing cross circulation and accounting for their high-cooling efficiency per pound of weight of cooler.

The hit of the year 1905 in radiator design has been our flat tube construction with gang fins. We make special designs for every class of car from the light runabout to the heaviest truck or omnibus.

The finish on Briscoe fenders is unexcelled. 1906 styles on metal dashes, hoods and runabout boxes are prepared and we are daily booking contracts for next season's business.

By dealing with us you get the benefit of our long experience and the protection of the many patents we own, covering our methods of construction.

The Pierce Great Arrow car which won the Glidden trophy was equipped with a Briscoe radiator. Of the twelve American water-cooled gasoline cars which received first certificates at the end of the tour six of the radiators were made in our shops, four were made by the car builders, and only two were made by other radiator manufacturers. These facts are typical of our prestige.

Our two large plants are ready to take care of our rapidly increasing business. We cannot only promise but make deliveries.

Write to our nearest office for estimates and get in line for 1906.

BRISCOE MFG CO.
DETROIT, MICH. and NEWARK, N. J.

This is NOT

A FAIRY TALE

We guarantee to increase the spark in your cylinders by

ONE HUNDRED PER CENT

Through our PATENTED

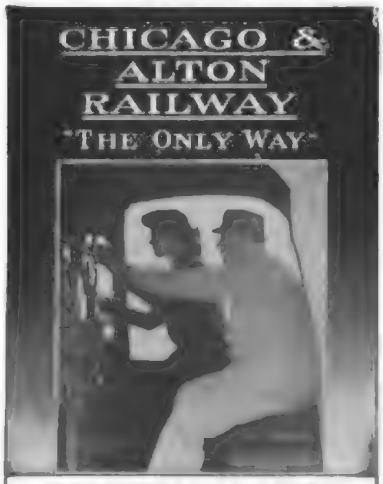
Steel Armored Ignition Cable

Adopted by the Leading European Firms

It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!

HERZ & CO., Civil Engineers 187 Elm St., New York

The largest manufacturers of Ignition Material in America



THE CHICAGO & ALTON runs the largest passenger engines in the world

They keep the trains on time

Between Chicago, St. Louis, Kansas City and Peoria

GEO. J. CHARLTON, General Passenger Agent
CHICAGO, ILL.

SKINNER Compound Air PUMP

200 lbs. pressure with less effort than 50 with any other

Automobile Tires Quickly and Easily Inflated

$5 ON APPROVAL

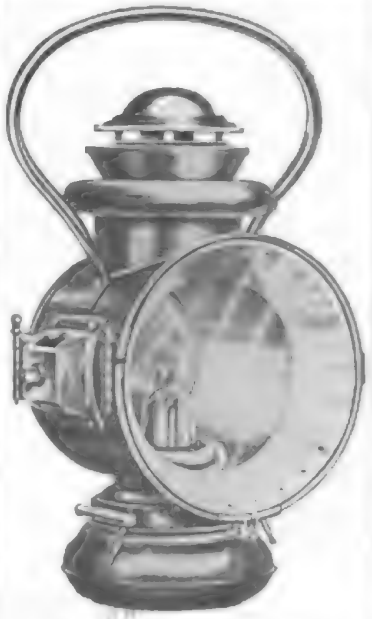
AT ALL DEALERS

LET US SEND YOU A SAMPLE

Sales Agents

New York—E. J. Willis Co.
" " Chas. E. Miller
" " A. H. Kasner
" " Wm. Wooster Co.
" " Judson-Downing Co.
Boston—Iver Johnson Sptg. Goods Co.
Boston—Boston Cycle & Sundry Co.
Baltimore—Coggins & Owens.
Chicago—Excelsior Supply Co.
Denver—The Consolidated Sup. Co.
Detroit—Monnier Auto & Cycle Supply Co.
Providence, R. I.—Pope Mfg. Co.
St. Louis—A. J. Dyke Auto Supply Co.
San Francisco—Van Zandt & McIntyre.
Rochester, N. Y.—The Sidney B. Roby Co.
Washington, D. C.—National Elect. Supply Co.

SKINNER & SKINNER
Manufacturers
4133 Indiana Ave. · CHICAGO



THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

C. T. HAM MFG. CO.
ROCHESTER, N. Y.

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog

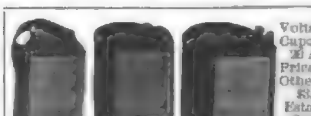
S. F. BOWSER & CO., Inc., XV Ft Wayne, Ind

THE USE OF

NON-FLUID OILS

Means: Cool bearings, small oil bills, less wiping down, entire satisfaction—that's all! If your dealer cannot supply you, please write us for free sample.

N.Y.&N.J. Lubricant Co. 14 Church St., New York 75 9th St., San Francisco



Voltage—4, 6 and 8. Capacity—23 Amp.-Hours. Prices—$6, $9, $12. Other styles—$3.25 to $12.00. Established 1899. Catalogues on Request.

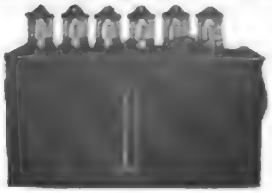
AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

CHAIN TOOL

THE MOTOR CAR SUPPLY CO.
1427 Michigan Avenue CHICAGO, ILL.

Force Feed Lubrication

Constant Sight Feed. No Liquids



McCord & Co., 1402-30 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 382 JACKSON BOULEVARD CHICAGO

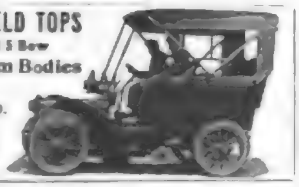
SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

72 Birnie Ave. Brightwood SPRINGFIELD MASS.



Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

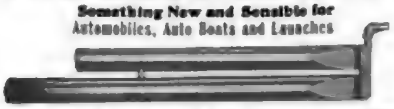
than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

A PLEASURE TO HEAR THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 36th St.

STA-RITE

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary

Condense Your Orders

thus obtaining lower prices, and use "Sta-Rite" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Send for our July, 1906, price list.

The R. E. Hardy Co.
225 W. Broadway, N. Y.

No. 4, ½-in. Porcelain, $1.50 P. J. DASEY 401 Wabash Ave., Chicago No. 34, ½-in. Mica, $1.75

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.
352 S. Claremont Ave.
CHICAGO.

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST

The Gilbert Mfg. Co.
New Haven, Conn

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers
Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2020 Axtell Street CLEVELAND, OHIO

Special Design Finest Quality—Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.
315 Michigan Ave Chicago

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation Zone Acetide)

Packed only in 10-lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET NEW YORK

ALUMINUM, PHOSPHOR BRONZE BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

ROFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St. NEW YORK, 69th St. & 9th Ave. PHILADELPHIA, 240 N. Broad St. Buffalo, Cleveland Automobile & Cycle Co., 649 Main St. ROCHESTER, 180 South Ave. BOSTON, 30 Stanhope St. DENVER, 1449 Clarkson St. SAN FRANCISCO, 635 Howard St. CHICAGO, 204 E. Lake St. ST. LOUIS, 3944 Olive St. ST. PAUL, 372 Minnesota St. DETROIT, 265 Jefferson Ave. PITTSBURG, 3935 Centre Ave. SAVANNAH, 330 Bull St. MINNEAPOLIS, 3d Ave. S. & 8th St. PASADENA, 53 S. Raymond Ave. PORTLAND, ORE., 140 Fifth St., N.

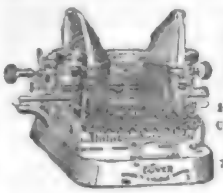
THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

We Want Agents for the OLIVER Typewriter

—the standard visible writer—

In cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co., 100-900 WABASH AVE., CHICAGO, ILL., U. S. A. Foreign Office 75 Queen Victoria St., London, England.

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas

Eclipse Pocket Ammeter
For General Battery Testing
0 to 20, 0 to 30 Amperes.

"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.

Eldredge Electric Mfg. Co. Springfield, Mass. U. S. A.

The Persuasive Instrument

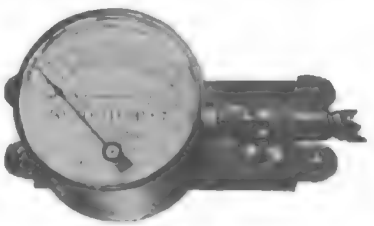
¶ The average person who drives a motor car has a desire to speed—to "let 'er out."

¶ But we have yet to find the man who has an insane desire to get within the clutches of the law.

¶ *The Jones Speedometer* has that peculiar influence over the speeding motorist—if he is beyond the limit—there is that "arrow"—a constant reminder. It persuades him to go slower. Thus it accomplishes a great service.

¶ And to each user of The Jones Speedometer we present our brass Protection Tag which warns the officer of the law, not to arrest on guess work.

ONES SPEEDOMETER
Manufactured by Jos. W. Jones
121 West 32d Street, - NEW YORK



WE ARE SOLE IMPORTERS OF
NIEUPORT IGNITION OUTFIT
The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

ALUMINUM
Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

VALVELESS-PUMPS
WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

MASON-KIPP MFG. CO., MADISON, WIS.

Dust Guards
Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN
124 W. Jackson Blvd., CHICAGO, ILL.

MOTOR AGE
Gets the News
Get Motor Age
$2.00 a Year

309 MICHIGAN AVE., CHICAGO

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

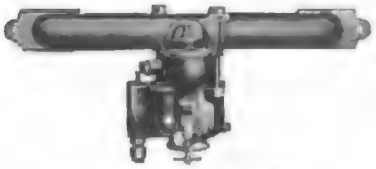
ROBERT VOLT-AMMETER
For General Battery Testing—Guaranteed
Reads both Volts and Amperes.
3-VOLTS 6-VOLTS
30-AMPERES 30-AMPERES
Send for Catalogue.
ROBERT INSTRUMENT CO.
63 Shelby St. Detroit, Mich

SPROCKETS
Chains and Differentials

CULLMAN WHEEL CO.
1021 DUNNING STREET, CHICAGO, ILL.

Digitized by Google

HOLLEY CARBURETORS



Special Model E for 1905 Winton

We are now prepared to furnish our new **Model "E"** carburetor for 1905 Winton cars Models B and C. This carburetor is furnished with aluminum manifold, so that old carburetor can be removed and the new one bolted in place with very little work. Price of special Model "E" carburetor with manifold for Model B and C Wintons, $18.00.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
⅛ in. and ¼ in. gasoline outlet	$11 00
1 in. gasoline outlet	12 00
1¼ in. gasoline outlet	13 00
1½ in. gasoline outlet	14 00

Increase the power of your car by equipping it with one of the following special **Holley Carburetors.**

SPECIAL SIZE FOR

Oldsmobile Runabout	$12 00
" Tonneau Car	11 50
" Touring Runabout	11 50
Ford 10 H. P., Model C	11 50

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.
672 Beaubien St., DETROIT, MICH.

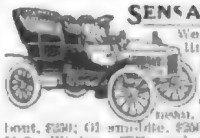
CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1297
1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1312 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago



SENSATIONAL PRICES

We are closing out all sundries lines together with all second-hand and shop worn models to make room for 1906 agency goods now coming in. Hoffman touring car, now $500; Marmon runabout, $250; Oldsmobile, $200; Buick, 24-0; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Empire-Miller," "Glide" and exclusive United States importers for the Benz, Mannheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES
FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 49
EXCELSIOR SUPPLY CO
ESTABLISHED 1876 CHICAGO

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1328 Michigan Ave., Chicago
Telephone, South 1658

GOOD AGENTS WANTED
REO
SEND IN APPLICATION
RALPH TEMPLE
309 Michigan Avenue CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
138 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO

The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer, Stevens-Duryea, Orient, Pierce-Arrow, Oldsmobile, Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY

ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1323-26 Michigan Ave. Phone 1099 South
228-35 Fourth St. Phone 2781 Main

Digitized by Google

Why does the

Gray Muffler

PLEASE THEM ALL ?

If you are having muffler troubles, write us. We guarantee satisfaction

Gray-Hawley Mfg. Co.

605, 607 and 609 Fort Street West

DETROIT ... MICH.

A Pleased Customer is the Best of Advertisements...

DR. MILTON T. WATSON
250 Woodward Ave., Detroit

August 15, 1905.

Gray Manufacturing Company,
Detroit, Michigan.

Dear Sirs—I am delighted to report my entire satisfaction with your model 16 Gray Muffler, which I am using on a 16 horse-power two-cycle engine. It completely muffles the sound, and the back pressure is less than two ounces, according to a test made yesterday.

In attempting to muffle this engine I had tried several different mufflers, none of the others being effective except those in which there was a great amount of back pressure.

Yours truly,
G. K. MILTON T. WATSON.

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

STORM APRONS

Runabout size, 2 openings	$7.50
Tonneau size, 4 openings	11.00
Touring Car size, 5 openings	13.50
Capes, 1 opening	2.00

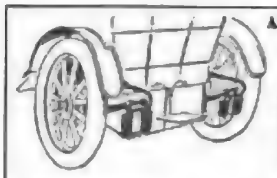
Our Storm aprons are made of heavy-weight rubber cloth with plaid back. Prices include fastenings for attaching to any machine. Terms—Cash with order. Money back if you are not satisfied.

Weed Chain Tire Grips

Send us the size you need and we will quote you a low price.

Mr. Dealer: Write us for our "Special Deal" on above goods.

THE BALL-FINTZE CO., Newark, O.



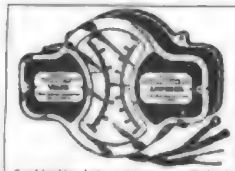
Absorbs all vibration

The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.



Combination Volt and Ammeter, Model R

Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works, Waverly Park, NEWARK, N. J.

New York Office, 74 Cortlandt Street

Switchboard Ins't Type S

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

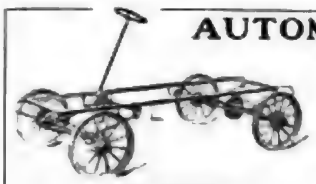
ALUMINUM CASTINGS BRONZE

MOTOR AGE

CONTAINS WEEKLY THE

Best Budget of Automobile News in the World

Subscription $2.00 A Year



AUTOMOBILE RUNNING GEARS

WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts.

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO.

SOMETHING NEW

IN BOTH AIR AND WATER COOLED **MOTORS** WRITE US FOR PARTICULARS

FAST MCH. & TOOL WKS.

23th and Greenfield Aves. MILWAUKEE, WIS.

"KENT POCKET METERS"

Accuracy Guaranteed

Volt-Am-meters 0-5V., 0-20A., Price $6.00.

Volt meters, 0-5V., $3.00.

Ampere meters, 0-20A., $5.00.

Discount to trade.

ATWATER KENT MFG. WORKS

115 N. 6th St. Philadelphia, Pa.

Standard Roller Bearing Co.

STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles

Send for Catalogue. PHILADELPHIA

Digitized by Google

For your Garage

Machine Wrenches, all kinds and sizes, milled openings.

For your Auto

Our General Service Wrench, ight, long, and strong. Get our illustrated Wrench Booklet.

The Billings & Spencer Co. : HARTFORD CONN.

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc, in the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers get to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

WHAT WE HAVE:

The **HERZ TIMER** 16 models, to fit any make of motor: Remember: It's TOOLSTEEL vs. TOOLSTEEL.
Bougie Mercedes—double stone.
Herz-Distributor—1 coil for all cylinders.
Guenet Coils. Carpentier-Interrupter.
New prices—Single, $36; double, $29; triple, $38; quad, $50.

A line of switches of original design: contacts dust-proof covered.
Detachable terminals.
Wire terminals with groove.
Special ignition cables and wires
Everything for the ignition.
One grade: The best.

HERZ & CO. Civil Engineers
167 Elm Street, New York

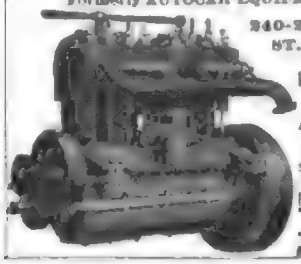
Write for free Vademecum of Ignition.

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.

Formerly AUTOCAR EQUIPMENT CO.



340-344 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETERSON & DRAPER

Direct Factory Representatives.

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

89 Vestry Street, NEW YORK CITY

Peerless Automobile Jacks

No. 15

Made in 2 styles and 6 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight 6½ lbs., price $2.50. Express prepaid in the United States. OLIVER MFG. CO., 205 S. Desplaines St., Chicago, Ill.

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

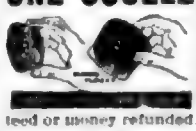
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY

WARREN, OHIO, U. S. A.

ONE SQUEEZE DOES THE BUSINESS



Nothing like it. Invest a quarter in a "GIBSON" Trick Purse, you'll never regret it. No removing of gloves to deposit or remove coin. Always open for money. All leather. Guaranteed or money refunded. Free samples for agents and dealers

GIBSON COIN PURSE C O., Box 1002, Bellefontaine, O

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE—16 H. P. Rambler, complete with top, acetylene lamps, etc. Nearly new. $925. Howard W. Gill, Park Ave. and Biddle St., Baltimore, Md.

KNOX BARGAIN

1904 Knox Leroy surrey, with canopy top, glass front, fully equipped, in first-class condition in every way; original cost, $1,675; can be bought now for $900. Must be sold at once. J. F. Kerfoot, Ottumwa, Iowa.

FOR SALE—16-horsepower, 2-cylinder, vertical Peerless auto engine with carbureter, governor, pump and commutator attached; almost new; for $115. Also 1-horsepower, 110-volt direct current electric motor, with starting box and switch, for $25. F. A. Weaser, 3105 Groveland Ave., Chicago, Ill.

FOR SALE—1904-5 "Premier," 4-cylinder, 16-horse; cost, with swell equipment, $1,600; detachable tonneau; condition perfect throughout; $850 cash. H. Coulson Fairchild, Passaic, N. J.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE (CHEAP)—One set light steel auto wheels, with axles; differential gear with large sprocket; 2-horsepower Crest motor, and carbureter. Will sell separately. L. A. Chandler, 108 Lowell St., Waltham, Mass.

Make Offer: 1905 E. Cadillac, with lamps Run two months. 3½ by 30 tires. Guaranteed perfect condition. J. R. Postal, Evart, Mich.

FOR SALE—Single cylinder, 8 H. P. gasoline touring car; excellent condition, speedy and good hill climber; $300 cash or will trade for real estate. F. G. Hodell, 24 Cooper St., Cleveland, O.

FOR SALE—Oldsmobile runabout, 1904 pattern; nearly as good as new; 7½ H. P.; $325; f. o. b. Dr. Barr, Bowling Green, Ky.

FOR SALE—A 1905 Model "F" Knox touring car, with glass front, 32x4 tires; guaranteed to be in A1 condition; will sell cheap for cash. Address W. E. W., 219 South 6th St., Minneapolis, Minn.

BARGAINS—3½ H. P. Crestmobile runabout, in perfect condition, $100. Thor motorcycle, nearly new, 2" G & J tires, all improvements, $100. New side carriage for above cheap. 2¾ H. P. Holly motorcycle, good condition, $55. Wm. Stiff, Bridgeport, Conn.

WANTED—Runabout or removable tonneau auto at a bargain. P. O. Box 241, Meriden, Conn.

FOR SALE—Very cheap; White steam runabout in first-class condition; one new 2-cylinder touring car; one 4-cylinder touring car, used little for demonstrating. Write for particulars. Detroit Auto Vehicle Co., Detroit, Mich.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

FOR SALE—Fine 38-foot, full cabined cruising launch; torpedo stern; 4 cyl.; 5x6 Rutenber motor. Cost $4,000. Will take auto in part payment. Address "Launch," care MOTOR AGE.

FOR SALE—1904 Winton. Having bought a Winton K, I will sell my '04 Winton, with top and everything complete, for $1,000. Guaranteed good as new. G. O. Simons, Bucyrus, Ohio.

1904 Haynes-Apperson runabout, with full leather top, extra surrey seat and full equipment of lamps; Rushmore searchlight; tools and extra tire; all in perfect condition; guaranteed so; owner wishes to purchase larger machine of same make; first check for $760 takes it. A. H. Anger, 316 Third St., Milwaukee, Wis.

WANTED

First-class gasoline and electric automobile salesman by Chicago house. One of the best lines on the market and good salary will be paid for a hustler. Correspondence considered strictly confidential. Box 12, care MOTOR AGE.

FOR SALE—Buick, Model C. New, but used a little for demonstrating; not run more than 150 miles. A splendid specimen of this popular car. Fisk tires. Will sell $200 below list to realize cash quickly. Kentucky Automobile Company, Louisville, Ky.

For Sale at a Bargain

One 1905 White steamer, complete with cape top, hampers, full lamp equipment, headlights and generator. Has been used very little; is practically brand new, and is in perfect condition throughout. We guarantee it equal to new in both value and appearance. Color red. Cost us $2,800 last May. Will sell for $2,000 if taken at once. Will be glad to demonstrate. H. M. Sheer Co., Quincy, Ill.

FOR SALE—Marble Swift friction transmission, lever, joints, brake; new; bargain. 729, 164 Dearborn, Chicago.

FOR SALE—In Chicago, 24-horsepower, 4-cylinder Peerless automobile, in perfect order; 2 Rushmore gas lamps, separate generator, three oil lamps, two extra tires, sliding gear, rear entrance. Body painted dark olive green, running gear light cream. Noiseless and very fast. Machine seats seven. Sells for $1,250. Must have money. A. 3, care MOTOR AGE.

Digitized by Google

FOR SALE—Haynes-Apperson runabout, '03 model; condition perfect, including mechanism, finish and tires. Fine full leather top. A beautiful and smooth running machine. Cost originally $1,450. Will make quick cash sale for $525 f. o. b. Louisville. Kentucky Automobile Company, Louisville, Ky.

FOR IMMEDIATE SALE—1903 Winton tonneau, $750; 1905 Model F Ford, tonneau, 12 H. P., $695; 1905 Rambler surrey I, 4-inch tires, like new, $825; Model E Rambler, buggy top, $225; 2—1903 Elmores, double cylinder, 12 H. P., tonneau, $200 and $300. Drop card for detailed description. Your opportunity to buy a good car below the market value. E. S. Youse, Reading, Pa.

FOR SALE—General runabout auto; fine condition; $400. Also fifty pounds calcium chloride in metal can for $2 with order. Reference, Dun. W. D. J. Everett, West Milton, Ohio.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

WANTED—To trade best grade Story & Clark piano for runabout, Stevens or Reo preferred. O. F. Holley, Madelia, Minn.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. G. M., care MOTOR AGE.

FOR SALE—High grade 8 h. p. double opposed engine, $125. 4 h. p. Marine and Auto motors, $65. Write. A. J. Houle Co., 8. East St., Holyoke, Mass.

AUTOMOBILE SCHOOL

CHICAGO SCHOOL OF MOTORING.

The original Automobile School in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request.

Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied.

CHICAGO SCHOOL OF MOTORING,
264 Michigan Ave. Phone Har. 119.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905 "Franklin" runabout in absolutely first class condition, used for demonstration only, and has had the best of care and is in every respect as good as new. R. D. Hamlen, 230 Grand Ave., Milwaukee, Wis.

TIRES.

ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second-hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

FOR SALE—1905 Packard Model N, in very best possible condition; fitted with $175 Cape Cart top; acetylene lamps, odometer and speedometer. Price $2,700. Have ordered new Packard. C. H. Ordway, 220 Clarendon St., Boston, Mass.

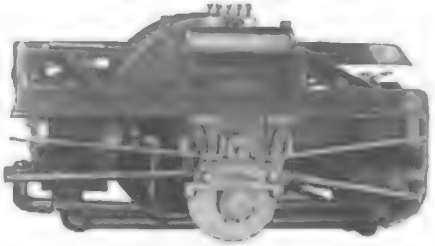
FOR SALE—Model L Rambler; has double opposed motors, 16 h. p.; looks well and is in good condition; tires almost new; sell cheap. One 1905 Model F four-cylinder, air-cooled Premier; new; never run; sell at a bargain. W. E. Rudy, Lima, Ohio.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

FOR SALE—One Olds runabout, one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars; also steam delivery wagons; all in first-class running order. Write for particulars if interested. K. A. Grout, Orange, Mass.

EQUALIZED SPRING TRUSSED FRAME
OF THE
1906 Logan
That Car of Quality

One of Many Points of Strength



One of Many Reasons for Comfort

PATENT PENDING

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

FOR SALE—Toledo steamer, $95; will trade 16 E. Washington St., Huntington, Ind.

WAVERLEY electric runabout of the type styled "Speed Wagon"; new this season and in perfect condition; batteries, thirty cells of 9 p. v.; buggy top. Apply to Wm. A. Tucker, 53 State St., Boston, Mass.

OLDS runabout, dos-a-dos seats, for sale; in good order. Louis Fricke, Park Ave., Ferry St., Hoboken, N. J.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—15 tube radiator, $10. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—To buy good second-hand Petrol cars, also chassis or sets of parts for building same; state terms, etc. The Thomson Motor Car Wks., Armadale, Victoria, Australia.

WANTED—Second hand motor cycle for cash. Must be a bargain. B. G. Raymond, St. Cloud, Minn.

MANUFACTURERS

Desiring a practical "Auto" man with sound business judgment, experience in manufacturing lines and repairs on cars, for salesman, agent, office, etc., will correspond immediately. Address C. B., MOTOR AGE.

FOR SALE—Olds Runabout, just overhauled and in best of running order. Rear tires nearly new. New top, never used. $100 worth of extras. All for $370. Will demonstrate. C. D. Dulin, No. 42, Webster, Iowa.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Tom Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

NYBERG AUTOMOBILE WORKS. CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.
661-673 Beaubien St. DETROIT, MICH.

CHICAGO
and
CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

MONON--C. H. & D.

Ride this way once and you'll ride again—we think.

Chas. H. Rockwell, Traffic Manager — Frank J. Reed, Gen'l Pass. Agt.
CHICAGO

FOR $2 PER YEAR
READERS OF
MOTOR AGE

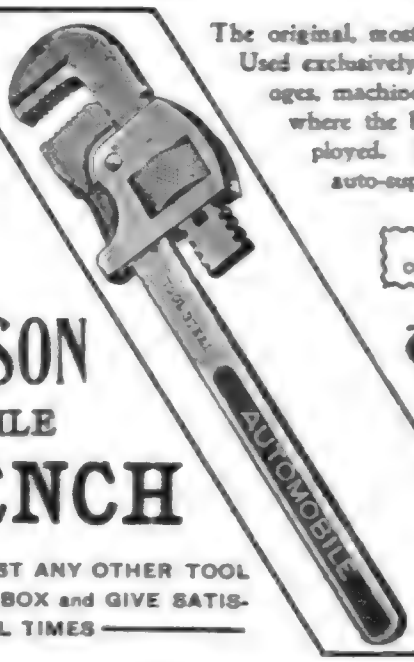
Receive 1560 pages of interesting mechanical descriptions and touring hints

WHERE CAN YOU BEAT THIS?

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston
Mass.
U. S. A.

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

Special Prices on Clincher Tires
FOR OCTOBER

One of the best tires on the market. We are on the inside.

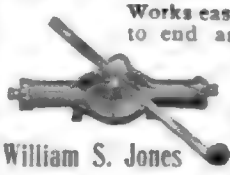
	Casing	Inner Tube
28x2½ . .	$13.94	$3.84
28x3 . .	22.80	4.64
30x3 . .	24.40	4.96
30x3½ . .	31.69	7.04
32x3½ . .	33.75	7.52
32x4 . .	38.93	9.09

We can supply other sizes at proportionate prices.

Neustadt Automobile & Supply Co.
826-28-30 S. 18th St. ST. LOUIS, MO.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

LEA TIRE PUMP



Works easy from beginning to end and saves money, time, strength and patience. Write for illustrated booklet B and proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 188 Fulton St., New York City
Philadelphia Office, 302 Lippincott Bldg. Boston Office, 15 School St

Diamond Chains

Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.

DIAMOND CHAIN & MFG. CO., Indianapolis

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 74
Adams Company 65
Adland Motor Co. 76
Allyne Brass Mfg. Co. 69
American Ball Bearing Co. 64
American Battery Co. 74
American Coil Co. 69
American Samson Leather Tire Co. 66
Apperson Bros. 71
Atwater-Kent Co. 77
Atwood Mfg. Co. 72
Auto Brass & Aluminum Co. 74
Auto Directories Co. 80
Automobile Equipment Co. 61

Badger Brass & Mfg. Co. 69
Baker Motor Vehicle Co. 59
Ball-Fintz Co. 77
Bartholomew Co. 71
Beaver Mfg. Co. 68
Billings & Spencer 78
Borbein, H. F., & Co. 77
Boston Auto Gage Co. 77
Bowser, S. F., & Co. 74
Briscoe Mfg. Co. 73
Brown, W. H. 75
Brown, S. N., & Co. 71
Buckeye Mfg. Co. 50
Byrne-Kingston Co. 60

Cadillac Automobile Co. 47
Cadillac Co. of Illinois 76
Canedy, Earle 72
Champion, Albert, Co. 75
Chicago & Alton Railway 73
Cleveland Motor Car Co. 46
Columbia Lubricants Co. of New York 60
Coey, C. A., & Co. 76
Continental Caoutchouc Co. 60
Continental Engine Co. 70
Continental Motor Mfg. Co. 78
Corbin Motor Vehicle Co. 43
Corwin Mfg. Co. 63
Cramp, Wm., & Sons, Ship & Engine Building Co. 70
Cullman Wheel Co. 75

Dayton Electric Mfg. Co. 69
Dayton Motor Car Co. 47
Diamond Chain & Mfg. Co. 80
Diamond Rubber Co. 51
Dixon, Joseph, Crucible Co. 72
Dyke, A. L., Auto Supply Co. 75
E. H. V. Co. 54
Eclipse Buggy Co. 74
Edmunds & Jones Mfg. Co. 60
Eldredge Electric Mfg. Co. 75
Electric Storage Battery Co. 75
Electric Vehicle Co. 65
Elmore Mfg. Co. 61
Excelsior Supply Co. 78

Fairmount Engineering Works 76
Fast Machine & Tool Co. 77
Firestone Tire & Rubber Co. 57
Ford Motor Co. 54
Franklin, H. H., Mfg. Co. 35
G & J Tire Co. 58
Gabriel Horn Mfg. Co. 74
Garford Mfg. Co. 61
Gibson Coin Purse Co. 78
Gilbert Mfg. Co. 74
Githens Bros. 76
Goodrich, B. F., Co. 46
Goodyear Tire & Rubber Co. 55
Gray-Hawley Manufacturing Co. 77
Ham, C. T., Mfg. Co. 73
Hardy, R. E., Co. 74
Hartford Rubber Works 52
Hartford Suspension Co. 78
Haynes Automobile Co. 49
Herz & Co. 73 78
Hine-Watt Mfg. Co. 69
Hofeller Brass Foundry Co. 74
Hoffheimer Soap Co. 66
Hollander & Tangeman 34
Holley Bros. 76-79
Hussey Drop Forge & Mfg. Co. 74
Hyatt Roller Bearing Co. 80
Imperial Brass Mfg. Co. 71
Imperial Wheel Co. 48
Importers Co. 76
Jackson Automobile Co. 50
Jeffery, T. B., & Co. ..... Cover
Jones Speedometer Co. 75
Kimball, C. P., & Co. 74
Knox Automobile Co. 68
Kokomo Rubber Co. 64
Leather Tire Goods Co. 67
Lester, E. F. 72
Light Mfg. & Foundry Co. 70
Link Belt Machinery Co. 55
Lloyd Iron Roofing & Paint Co. 67
Lobee Pump Co. 72
Locomobile Co. of America 63
Logan Construction Co. 70
London Auto Supply Co. 67

McCord & Co. 74
McDuffee Automobile Co. 76
Mason-Kipp Mfg. Co. 75
Matheson Motor Car Co. 68
Maxwell-Briscoe Mfg. Co. 59
Mead Motor Co. 76
Mexican Mfg. Co. 74
Meyers, A. J. 72
Mezgar, C. A. 69
Michelin Tire, American Branch 56
Miller, Charles E. 64
Miller Signal Co. 74
Milwaukee Steel Foundry Co. 75
Mitchell Motor Car Co. 36
Moline Automobile Co. 63
Monon Route 70
Morgan & Wright ..... Cover
Mosier, A. R., Co. 71
Motor Car Equipment Co. 53
Moron Aco 44
Motor Car Specialty Co. 80
Motor Car Supply Co. 74
Motz Clincher Tire & Rubber Co. 66
Mutty, L. J., Co. 74

National Motor Vehicle Co. 65
National Spring & Wire Co. 74
Neustadt Auto Supply Co. 80
Never-Miss Spark Plug Co. 72
Newmastic Tire Co. 72
N. Y. & N. J. Lubricants Co. 74
Nordyke & Marmon Co. 48
Nyberg Automobile Co. 79

Oakes & Dow Mfg. Co. 68
Olds Motor Works 53
Oliver Mfg. Co. 78
Oliver Typewriter Co. 75

Packard Electric Co. 78
Packard Motor Car Co. ..... Cover
Pardee & Ullman Co. 70
Pederson, J. T. 72
Peerless Motor Car Co. 39
Pennsylvania Rubber Co. 54
Pierce, Geo. N., & Co. ..... Cover
Pittsburg Reduction Co. 75
Pope Motor Car Co. 63
Prest-O-Lite Co. 62

Quaker City Automobile Co. 76
Railway Appliance Co. 74
Rainier Co. 38
Robert Instrument Co. 75
Rose Mfg. Co. 70
Royal Motor Car Co. 50
Rubay, Leon 72
Rubber Goods Repair Co. 76
Rushmore Dynamo Works 58

St. Louis Motor Carriage Co. 72
Shawver & Co. 72
Skinner & Skinner 73
Springfield Metal Body Co. 74
Standard Roller Bearing Co. 77
Standard Welding Co. 42
Stanley, John T. 62
Steel Ball Co. 64
Stevens, J., Arm & Tool Co. 37
Stolp Mfg. Co. 69
Strelt, A., Machine Co. 69
Supplementary Spiral Spring Co. 77
Syracuse Aluminum Bronze Co. 77

Temple, Ralph 76
Thomas, E. R., Motor Co. 41
Thompson, Chas. A., Co. 72
Trebert Gas Engine Co. 71

United States Auto Co. 76
U. S. Jack Co. 74
Veeder Mfg. Co. 70
Vesta Accumulator Co. 71

Wabash Railway 77
Walworth Mfg. Co. 80
Warner Instrument Co. 62-67
Wayne Automobile Co. 52
Weber, O. F., Co. 76
Weed Chain Tire Grip Co. 70
Welch Motor Car Co. 72
Western Tool Works 65
Weston Electric Instrument Co. 77
Wheeler, F. H. 51
White Sewing Machine Co. 49
Whitlock Coil Pipe Co. 70
Whitney Mfg. Co. 62
Willard Storage Battery Co. 70
Willis, E. J., Co. 72
Winkley Co. 72
Winton Motor Carriage Co. 33
Witherbee Igniter Co. 45
Worthington Automobile Co. 56

Digitized by Google

MOTOR AGE

VOL. VIII NO. 18 . CHICAGO, NOVEMBER 2, 1905 $2.00 Per Year

NEW ORLEANS MOTORIST'S PARADISE

BAYOU ST. JOHN, ON ROAD TO SPANISH FORT

NEW ORLEANS, La., Oct. 30.—This city and the pine lands and gulf coast about it is now the center, not only of a teeming commercial life and prosperity, but also of attraction for travelers who seek warmer climes and scenes of historic and natural beauty and interest. No one element is contributing to the latter development more than the wonderful opportunities offered here for the automobilist. These opportunities have not been taken advantage of as yet to any considerable extent, as automobiling here is in its infancy. Three years ago there were just three automobiles in New Orleans. Now there are hundreds, with purchasers in sight for the immediate future that will bring the total near 1,000 very soon. In the past summer 30 miles of macadamized or asphalt pavements have been put down, and 60 miles more is contracted for. A great connecting speedway and boulevard is proposed to connect the two immense if partially unimproved park areas of the city—City park and Audubon park. Another improved road is proposed connecting the center of the city with the old shell roads leading to the lower river coast. Yet another shell road is talked of, leading out of the city to a ferry across the Rigolets, where the British fleet forced its way against a small detachment of Americans in flatboats in 1815, and thence to the Riviera of America—the Mississippi gulf coast. An automobile club has recently been organized, with Charles U. Kennedy, the pioneer automobilist of the city, as president, and a number of the most prominent men in the city active sponsors and members.

About the city, on quaint, old-time shell roads, over ancient cobble-stoned streets, or near modern, clean-swept macadam or asphalt as the case may be, are scenes and resorts full of the interest of 200 years of stormy life. French, Spanish, Americans and English people of four generations and three great races have poured out their blood about it and have left behind scenes of interest, seldom failing in the picturesque, never failing in the element of romance and often affording the opportunity for new phases of interest, fresh features unique and singular to the section and the time. Within a radius of 8 miles from the center of the city are the United States barracks and the battlefield of Chalmette; Spanish fort, the historic Bayou St. John road leading to it, and the view across Lake Pontchartrain; West End, the sum-

Digitized by Google

mer casino, and the shell road leading for 5 miles through the salt marshes and along the edge of the New Canal; City park, the dueling oaks, the golf links, and the miles of roadways under the great live oaks of what was once a great plantation; Audubon park, where the Cotton States' exposition in 1885 began the new life of the city, and where the modern Tulane university crowns the view of the broad expanse of this tract, whereon sugar cane was first grown in America.

Longer tours there are a-plenty—the 131-mile run through the picturesque sugar country up the Mississippi river to Baton Rouge; the 200 mile run around the lakes to the gulf coast, going through the live oak swamps of Louisiana, the pine dune country of Mississippi, and out on the 30-mile level sweep of the sand and shell clay roads of Mississippi. Nowhere else in America can the same weird, semi-tropical scenery, the level roads of shell and clay, through live oaks and pines, cane field and cotton fields, past old plantation homes of the ancient regime, past century-old forts of the Spanish time, past new sugar houses and humming saw mills, be seen, every one of them linked one way or another with stirring memories and dramatic episodes in the country's life.

Given evening in October, with the harvest moon in the first quarter, the wind coming in from the far-off gulf, the city just beginning to wake up from the long summer siesta, the lights and crowds in Canal street, dinner over, and the throngs of the theaters left behind for a breath of fresh air and a glimpse of scenes where sky-scrapers and electric lights may be forgotten and you have your inspiration. A car taken from the private garage, or one of those for the public that are now being established through the city, gives you the transportation. The party? Well, just the party any one who visits New Orleans or who lives there would choose to aid him in enjoying a southern autumn moonlight night with a setting of scintillant water, breeze-stirred oaks, historic tropic scenery, and flavor of romance not toon strong for twentieth century money-making or money-spending folk. The Bayou St. John highway to Spanish Fort is the route chosen, with a detour, making the trip a 7-mile jaunt out and 7 miles back, with time for supper overlooking Lake Pontchartrain.

Dueling Oaks and Tomb in City Park, New Orleans

First it is down into Canal street, dodging among the cars and the crowds, thence across the great thoroughfare and into the old French quarter. Seventy-five years ago a certain grand dame of the quarter was mobbed for inhuman cruelty to her slaves and was forced to flee from her home on Royal street, by carriage out to Spanish Fort, where she took a schooner for Mobile. The tourist should follow her route, for she went what was then and is now the most picturesque way. One change should be made. Chartres street, better paved, leads from Canal down before the Cabildo and the Cathedral St. Louis. Five minutes from Canal street, and the moonlight on the century-old buildings, with their quaint Spanish architecture, comes into view. About the square before the old buildings, a tall hand-wrought iron fence encloses the palms and shrubs that soften the one-time paved surface of the old Plac d'Armes. On either side, leading toward the river, are the Pontalba buildings, once aristocratic apartments where the elite of the city had their homes—now deserted save by the poorer peoples who have monopolized the pleasantest location and the most picturesque spot in all historic old New Orleans.

Spanish Fort, Looking on Lake Pontchartrain

Down Chartres street to Hospital street the car goes out Hospital street across Circus street to the Bayou road, out the Bayou road, to Bayou St. John. This takes the party through 3 miles of the old city, with the spaces widening at the end until old-time plantation homes occupy great squares of oaks and palms. Down Bayou St. John, under half speed, past boat-houses, more plantation homes, and then into the oak and cypress swamp, with the bayou on the one hand, and the fire-fly-studded, salt marsh on the other. The road is shell, over 100 years old, solid with a solidity that the winter rains can never feaze. Now and then some fellow-tourist dashes by, coming in from the lake. Here and there, like a ghost of the moonlight night, a lugger, with half-furled sails, drifts in toward the city, with singing Italians manning the sweeps, or lolling about the decks. Again a naphtha launch swishes past, turning the still water into a furrow of blazing phosphorescent brilliancy. Then the lake. The lights gleam from casinos and restaurants overlooking the water. Gaunt, weather-beaten oaks

Digitized by Google

stand out above the little islet where in ancient days the Spanish sentinels kept watch and ward against the buccaneers that once ventured into Lake Pontchartrain in search of plunder.

Luncheon follows, or supper, or dinner, as you may call it, with gumbo, bisque, croakers or sheepshead or flounders, or crabs or oysters, egg—cornbread, or dainty French rolls, washed down with claret or Moselle, or Rhine wine—with coffee and cigars or cigarettes afterward to the music of the water against the piers or the band across the plaza, while the moon sinks to rest out across the lake, where the Barataria skirted the inner shore to escape the American cruisers sent to capture them. Later, the ride back to the city, through the darkening night, and the silence, with the swamp noises emphasizing the silence, strange and mysterious here within 20 minutes of a bustling, modern city.

To West End is a trip like unto that just described that may be taken. Again there would be the shell road, the lake view and the rest at the further end, and the ride along the canal, with luggers and schooners and tug boats in greater number to break the monotony of the way. A morning jaunt popular with the amateurs of the city, takes in a circuit of the parks of New Orleans—down from Canal street to the old French market, where a typical New Orleans meal, or breakfast at Begue's may be had; thence to Esplanade avenue, along that thoroughfare, past miles of houses of the ante-bellum French period, across Bayou St. John, and out the Park road, through City park, by the Country club, and the Panama race course; around by the cemeteries, where unique and beautiful Metarie, most solemnly artistic of any similar place in the south, makes the onlooker forget death in the magic of the fine surroundings.

From City park, the way may be taken around the proposed route of the new connecting roadway. Here the improvements are lacking, but the way is not rough enough to materially interfere with the comfort of the automobilists on their pleasure-seeking trip. Through open country the way goes, where building lots are advertised for sale and homestead associations are opening up new streets and avenues for the rush of population that every modern Orleanian believes is sure to come in the immediate future. Into Carrollton avenue, once the chief thoroughfare of the county site of Jefferson parish, miles distant from New Orleans, now merely a continuation of St. Charles avenue; past the front of Tulane university and into Audubon park. Fifteen miles of good shell and gravel roadway leads through what was the first sugar plantation in America, and what was the site of the famous Cotton States' exposition of 1885. Here is the government and the state experiment station, Horticultural hall, the Audubon oaks, and a cool and breezy safe where luncheon may be had before the 5-mile spin down St. Charles avenue to the hotels and the business center of the city, where the picturesque trip ends.

Yet another tour for an afternoon, a morning, or an entire day, extends the full length of the French quarter, down through the German market gardens, and into the old plantation district yet remaining below the city in St. Bernard Parish. Jackson barracks, named for Old Hickory, and built just after the war of 1812 on the site of a fort that dated back to Spanish times, is a scene of interest 6 miles down the river. There P. T. Beauregard, the hero of Louisiana during the civil war, worked as a lieutenant with George B. McClellan, drawing plans for the New Orleans custom house before either became prominent. U. S. Grant was on duty there as lieutenant in charge of the commissary department. Robert E. Lee was subaltern there just prior to the Mexican war. Gen. Miles was stationed there for a while, in the early '70s. The old brick gateway, built over 100 years ago, still holds the guard-room, and the big iron gates still swing on the hinges that gave way for Gayoso, Claiborne, Jackson, Lee, Grant, Miles and Beauregard.

Below the barracks a great railroad has purchased a vast area and is turning old-time plantations, with stately homes and beautiful groves, into a wilderness of tracks and switches, wharves, warehouses, and factories. Before this invasion there was a government shell road from the barracks down to Chalmette. Now the railroad is building another shell road behind its reservation, and then back to the river front, and thence down to the monument and the cemetery. The river road goes on down, past other plantations, scenes full of historic interest and replete with natural beauty, to Lake Borgne canal, where dinner may be had, and the return trip begun. It's well worth the while.

CHARTRES STREET — HISTORIC PART OF — OLD PORTION OF NEW ORLEANS

Digitized by Google

TRIMS ORMOND-DAYTONA CARD

Senator Morgan Eliminates Useless Events and Makes His Feature a 2-Mile-a-Minute Race—Seventeen Contests, Fourteen of Them Championships—Five Days' Sport

New York, Oct. 27—The program for the annual Florida beach meet, which will take place on the Ormond-Daytona beach January 23-30, 1906, has been determined upon and was announced today. In making up the list of events Senator Morgan, on behalf of the Florida East Coast Automobile Association, called in as advisers men connected more or less prominently with the American Automobile Association, the National Association of Automobile Manufacturers, the Automobile Club of America and the trade and daily press. The result of their conferences is a program in which there is no discrimination against any weight or power and each class is given an equal number of events to which it is eligible. No distinctive events, however, have been provided for lightweight racing cars at present and will not be unless there be a demand for them from makers and assurance be given of a sufficient number of entries to insure adequate competition.

The theory followed in arranging the card was that the annual meet on the beach is in the strictest sense a high-speed carnival and accordingly a tournament primarily for racing cars. The experience of the past has been that entries outside of cars practically of the racing class have been insignificant in numbers and importance. It has also proved that the 5 days available for racing, limited as they are by tide conditions, permit little time for the settlement of the relative superiority at adequately varied distances of other than the racing machines and allow practically no opportunity for stock car demonstration. Then, again, last year's sad experience and futile attempt to run off a too lengthy program in the scheduled 5 days, which resulted in a lap-over of two days into the following week, and other schedule miscarriages too painful to recall, demonstrated the necessity of a very considerable cutting down of the number of events. Accordingly the racing card has been shortened from thirty to seventeen competitive events, not including the record trials for all classes at 1 mile and 1 kilometer.

Of these seventeen events, fourteen are open championships, the other three being an American car championship, a price handicap for American stock cars and an open handicap. Four classes of racing cars are recognized by the program—middle weight gasoline, heavy weight gasoline, middle weight steam and heavy weight steam. Each gasoline class has two exclusive championships, a weight championship open also to steam and five free-for-all championships, to which it is eligible. There are two championships for steam vehicles irrespective of weight, a weight championship open also to gasoline, and five free-for-all championships. To these competitions are to be added the class record trials at 1 kilometer and 1 mile. Thus summarized the program in detail for the southern affair follows:

One-mile middleweight championship, gasoline.
One-mile heavyweight championship, gasoline.
One-mile championship, steam.
One-mile world's championship free-for-all for Dewar cup.
One-kilometer record trials for each weight and power class.
One-mile record trials for each weight and power class.
Two-mile-a-minute record free-for-all. The winner must equal or exceed 120 miles an hour.
Five-mile middleweight championship, gasoline.
Five-mile heavyweight championship, gasoline.
Five-mile championship, steam.
Five-mile free-for-all championship.
Ten-mile middleweight championship, all powers.
Ten-mile heavyweight championship, all powers.
Ten-mile free-for-all championship.
Ten-mile handicap, open to contestants who start in previous events.
Fifteen-mile free-for-all championship.
Fifteen-mile price handicap for American touring cars fully equipped.
Thirty-mile free-for-all championship for American-built cars.
One-hundred-mile free-for-all championship.

The question of the admission of so-called freak racing machines, which the foreigners assert is largely responsible for their failure to enter more generally in the annual straightaway tournament, was easily and logically answered by the announcement that the definition of a legitimate motor car adopted by the A. A. A., under whose rules the races will be run, would be followed as fixing the standard of eligibility. The rule in question, which is clause 19 of the A. A. A. racing rules, is as follows:

An automobile, motor car, or car within the meaning of these rules, is a four-wheeled track or road vehicle propelled by self-contained mechanical means, and provided with suitable brakes, a differential gear or its equivalent, and a reverse gear.

Under the rules the weight classification, which follows the international classification, is as follows: Lightweight, 551 pounds to 881 pounds; middleweight, 882 pounds to 1,432 pounds; and heavyweight, 1,433 pounds to 2,204 pounds.

Each car will be confined to its own weight class in all events classified by weight in accordance with a ruling of the A. A. A. racing board made on May 4, 1905, which decided "that cars be limited strictly to their own weight classes, since all cars are eligible in free-for-alls." This means the middleweight cars cannot compete in heavyweight classes, nor is any car over 2,204 pounds weight eligible in any class.

So much for eligibility. It would seem that the limiting of cars to the international weight standard and to the form of construction outlined in the A. A. A. rule on the question was a reasonable and sufficient answer to the freak complaints at former meets and would hold down the competitors to as reasonable and logical a restriction as is possible in a competition of cars which are essentially speed machines built for the world's greatest speed tournament.

A new event—the 2-mile-a-minute free-for-all record trial—is the creation of Morgan's inventive genius. It is a veritable inspiration and an idea calculated to keep the Ormond-Daytona meet abreast of the speed advancement of the automobile. A mile a minute now belongs to the remote past and is only fit for a stock car standard.

In 1905 W. K. Vanderbilt, Jr.'s, mile of the year before on the Florida course was cut by Arthur MacDonald from 39 to 34⅘ seconds, not to take into consideration the 32⅘ seconds by Henry L. Bowden in his overweight, double engine freak. Cars far faster than these have since been built and are building, which will be on hand next January for a further assault on the figure that is emblazoned on the front of the clubhouse at Daytona, and are sure to bring the record below the half minute. In view of this Morgan conceived the 2-mile-a-minute race. It will be run in a series of time trials. The time specified must be made to entitle the victor to the novel trophy and ceremonial of conquest the senator has in mind. In the event of its attainment by more than one competitor the prize will of course go to the one who makes the biggest cut under the 120-mile-an-hour rate.

The prize list will be exceptional in character and will contain many trophies of great value. Undoubtedly the Minneapolis cup, donated by the Minneapolis Automobile Club, of which Asa Paine, the new president of the F. E. C. A. A., is a member, is probably the most magnificent. Motor racing enthusiasts who, as last year, may desire to be represented in the Florida prize list, can communicate with the management. Such prizes will be allotted to the championship races scheduled above.

In order to be eligible for the time trials cars will be required to compete in the regular competitive events in which they are entered. No car will be accepted for the touring car event unless fully described in the catalogue of the maker issued not later than 30 days before the closing of entries. All contestants will be subject to weight examination before and after competing.

The entrance fee for each event is $20, with the exception of the Dewar trophy contest, which is fixed by its deed of gift at $50. In some of the events it is probable that the heats will be arranged according to the nationality of the cars. Applications for entry blanks should be addressed to W. J. Morgan, 116 Nassau street, New York city, and from the same source any additional information may be obtained.

THOMAS PLANS PARIS TRIP

Buffalo, N. Y., Oct. 30—E. R. Thomas, maker of the Thomas Flyer, is completing arrangements for an excursion to the French automobile salon, which opens at Paris December 8. Reduced rates have been secured from steamship companies, railroads and Paris hotels, and altogether it is estimated that the cost of the trip will not exceed $225. A general invitation has been extended by Mr. Thomas to all those who propose to buy automobiles during the coming year and to those who are interested in any way in the trade of automobiles in general. Arrangements are now being completed for incidental trips to a number of the plants in France.

Digitized by Google

CADILLAC IN MERGER

Detroit Automobile-making Concern Consolidates with Leland & Faulconer Mfg. Co.

Detroit, Mich., Oct. 30—Announcement is made of the consolidation of the Cadillac Automobile Co. with the Leland & Faulconer Mfg. Co. under the tentative name of the Cadillac Motor Car Co., with a capital stock of $1,500,000. The objects are to manufacture, buy and sell cars, carriages, wagons, boats and vehicles of all kinds. None of the capital stock is paid in cash. The total net assets of the Cadillac Automobile Co. are given as $1,000,000, of which $200,000 is business and good-will. Buildings and land at Cass and Amsterdam avenues are valued at $418,118.26; cash, $39,416.81; merchandise—finished product and raw material—$358,733.21; machinery, tools, patterns, models, fixtures, supplies, etc., making up the total. The Leland & Faulconer Mfg. Co. put in: Cash, $123,249.34; outstanding accounts, $40,349.87; machinery and foundry equipment, $104,059.34; merchandise and supplies, $93,866.15; business and good will, $75,000, with indebtedness $31,000, making the total net assets $500,000. The two concerns have been very closely allied in the past, the Leland & Faulconer company making the engines and other parts for the Cadillac company. The stock has been to a great extent in the same hands, and a correlation has existed among the officers of the two concerns.

"The business of both concerns has shown a remarkable growth," says Henry M. Leland. "While the original companies were organized with a capital stock of $300,000 and $175,000 respectively, I can say that every dollar of the present capitalization is represented by something tangible. The Cadillac Automobile Co. did a larger business last year than any other automobile company in the world, its output being 4,000 machines. We do not believe in declaring dividends before they are made or counting our chickens before they are hatched; but we think we are safe in expecting a still larger business next year."

In filing articles of association, Messrs. Black, Bowen and Leland acted as trustees for ten stockholders, the others being: A. E. F. White, William H. Murphy, William E. Metzger, Wilfred C. Leland, Everett Leonard, Harry Pettee and A. C. Leonard, all of this city.

At a meeting at the Cadillac Automobile Co.'s office, Lem W. Bowen, A. E. F. White, Clarence A. Black, William H. Murphy, Henry M. Leland, William E. Metzger and Wilfred C. Leland were elected directors.

MILLIONS FOR GOOD ROADS

New York, Oct. 29—A constitutional amendment providing for the expenditure of $50,000,000 in New York state for the improvement of the highway is to be voted upon at the election next week. A. R. Shattuck, chairman of the good roads committee of the A. C. A., has sent out a circular letter to all New York motorists urging that they vote and work for the passage of the amendment.

Mr. Shattuck, who has labored enthusiastically for better highways, points to the fact that if the amendment is carried New York state will spend $50,000,000 on good roads in the next 10 years, the expense of which under the bond issue will be divided into 50 per cent on the state, 35 per cent on the county and 15 per cent on the town in the form of annual tax levies of $400 for each mile, being the interest at 5 per cent on the bond issued for a mile of roadway costing $8,000. At the request of the executive committee of the supervisors' highway convention Mr. Shattuck requests motorists to contribute $10 each to carry on this campaign. The money can be sent to him in care of the Automobile Club of America. Most important of all, Mr. Shattuck wishes motorists to vote for the amendment on election day and to make a canvass among their friends with this object in view. By state aid New York has built and has under contract 700 miles of state roads and has appropriated, all told, $3,223,265, but the state finances are such that this year it could appropriate only $100,000. In 1903 a constitutional amendment was passed by the legislature permitting the state to bond itself for $5,000,000 a year for 10 years. This amendment, as required by law, was passed again by the legislature in 1905, and will be submitted to the vote of the people at the next election, on November 7. If the amendment is carried by the popular vote the state will build between 600 and 700 miles of state roads a year, and in 10 years, instead of its roads being a disgrace to civilization, as at present, New York will have 7,000 miles of fine roadway connecting the principal cities of the state, which will make motoring almost universal throughout the state.

FORTUNE IN NEW YORK'S ROW

New York, Oct. 30—The expenditure of millions of dollars is under way already or planned in the immediate future for garages along New York's new automobile row, which will extend along Broadway for a mile from Forty-fifth to Sixty-fourth street and include locations on the side streets near to or adjoining the main thoroughfare. Already, in addition to the great garage just completed by Smith & Mabley, the Pope, Winton, Thomas and Packard cars are housed in spacious and elegant headquarters. The Ford Motor Co. is remodeling a big Broadway stable and E. B. Gallaher, agent for the Richard-Brasier and Cleveland, another one on Fifty-eighth street just west of Broadway for garage purposes. The new half-million-dollar A. C. A. club house on Fifty-fourth street will have an enormous garage for members. The Auto Import Co. garage at Broadway and Fifty-seventh street, which has been leased by the American Locomotive Co., and the garage building for the Lozier branch at Broadway and Fifty-fifth street will both be occupied by show time. Adjoining the Smith & Mabley plant on the corner of Fifty-sixth street is another building for rent for a garage. Of the proposed new Thomas garage at Sixty-third street and Broadway MOTOR AGE told last week.

KEEP TAB ON AMERICA

Britons Watch Vanderbilt Race Results and Are Not Alarmed By United States' Showing

London, Oct. 21—The Vanderbilt cup race, while not evoking any particular enthusiasm on this side, was keenly watched by British motor manufacturers in order to learn how far American builders have progressed. They profess to be satisfied that American development and progress has been only what was to be expected from increased experience and does not at the moment, disclose any potentialities such as would warrant any international trade developments from your side. Lancia is very sincerely sympathized with on his renewed ill luck, but his performance simply goes to show that the 1905 Bennett form was of a very high racing order, as a reference to his driving in comparison with that of Thery, Caillon and others will indicate. The protests of Hemery and Heath, which were later withdrawn, are not regarded as a very sportsmanlike proceeding, but the least we say on that subject the better, for our international contests on this side have not been distinguished by sportsmanship. It is expected that the protests were based on the supposition that Darracq's tires were English-made Dunlops and that the Darracq radiator was made by Megerisy of Geneva, who supplies quite a large proportion of the French trade with the honeycomb form of radiator, just as Lemoine supplies Germany and England with axles. But the Dunlop tires used by Hemery were made in France by the French branch of the Dunlop company—the high import duty necessitates that—and the writer is told by the Darracq representative here that the radiator is one specially constructed in France to meet the Bennett regulations. But the protest against Heath's Panhard puzzles and amuses, for it is well known that nothing not French is incorporated in any Panhard sold in France—not to speak of an international racing car, subject to such conditions as control the Vanderbilt race.

CLOSES DE DIETRICH BRANCH

New York, Oct. 30—"De Dietrich, American Branch," is no more. Baron Adrien de Turckheim, on his visit to this country for the Vanderbilt cup race, decided to close the branch. The American de Dietrich agency has been taken by a syndicate headed by Walter Allen, of the former firm of Allen, Hall & Co., which last year imported the Mercedes cars. Incidental to the breaking up of the branch there was a receiver's auction sale, at which fifteen cars and a motor boat were sold at figures so great as bargains as to be the talk of the town. The aggregate was $38,000. Mr. Allen secured the 90-horsepower racer which won the Vanderbilt 100-mile race at Ormond and scored world's records in Cuba and was driven by Gabriel in last year's race on Long Island for $1,950. The Pullman car, for which $16,000 was asked last year by the de Dietrich people sold for $3,500.

Digitized by Google

NEW YORK ECONOMY TEST IN FULL SWING

On the Road to the Manhattanville Ferry—From Staten Island to the Jersey Shore

PHILADELPHIA, Pa., Oct. 30—Eight of the nine cars which started from the Smith & Mabley garage at Broadway and Fifty-sixth street, New York, between 8:38 and 9:07 o'clock this morning, on the economy test of the New York Motor Club, completed the run of 102 miles to this city in good shape and time this afternoon. The only car to fall by the wayside was a Compound, No. 5, which stripped the tooth of a gear and was forced to drop out at New Brunswick.

At the present writing there are but few results to state from an economical standpoint beyond the statement that the mechanical repairs were trifling in the aggregate; in fact, but a few pennies over $2 for the entire octet. Of actual gasoline consumption nothing can be told until the tanks are filled tomorrow morning and the figures are given out at the meeting of the officials on the arrival of the cars in New York tomorrow evening. There were gasoline charges against three cars, which took on fuel en route by way of precaution; but as this will count in their favor when tomorrow's tank filling comes their averages suffer but temporarily.

There was no attempt whatever today at speeding, all being satisfied to keep well within legal limits. Besides, there were three ferries crossed and the catching of the hour-apart boats at Tottenville was largely a matter of luck. Still, to satisfy curiosity, the elapsed time of the cars, including the three ferriages, is quoted in the following details of the contesting cars.

No. 1—Frayer-Miller, 24-horsepower, side entrance tonneau, entered by Oscar Lear Auto Co., Columbus, O.; price, $2,500; Continental tires; five passengers; Lee Frayer, driver. Elapsed time, 8 hours 39 minutes.

No. 2—Marmon, 20-horsepower, side entrance tonneau, entered by A. E. Schultz, New York; price, $2,500; Diamond tires; four passengers; Conrad Sargenson, driver. Elapsed time, 8 hours 20 minutes.

No. 3—Reo, 16-horsepower wagonette, entered by R. M. Owen, New York; price, $1,600; Diamond tires; ten passengers; R. L. Lockwood, driver. Elapsed time, 10 hours 2 minutes.

No. 4—Reo, 8-horsepower runabout with folding detachable rear seat, entered by R. M. Owen, New York; price, $675; Diamond tires; four passengers; C. C. Singer, driver. Elapsed time, 9 hours 53 minutes.

No. 5—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, $1,450 with lamps; Hartford tires; five passengers; D. F. Graham, driver. Stripped gears at New Brunswick.

No. 6—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, $1,450 with lamps; Diamond tires; five passengers; F. C. Carter, driver. Elapsed time, 8 hours 41 minutes.

No. 7—Compound, 12-15-horsepower, side entrance detachable tonneau, entered by E. V. Co., Middletown, Conn.; price, $1,450 with lamps; Goodrich tires; four passengers; C. P. Hatch, driver. Elapsed time, 8 hours 54 minutes.

No. 8—Olds, 8-horsepower curve dash runabout, dos-a-dos, entered by Oldsmobile Co., of New York; price, $670; Diamond tires; four passengers; Freeman Monroe, driver. Elapsed time, 8 hours 32 minutes.

No. 9—Wayne, 20-horsepower, side entrance tonneau, entered by Wayne Automobile Co., Detroit, Mich.; price, $1,250; Fisk tires; five passengers; A. L. Kull, driver. Elapsed time, 7 hours 50 minutes.

The tentative record of the cars given out tonight is quoted below, though the figures mean little beyond showing the charges for mechanical repairs. The averages will all be raised by the gasoline charges, though those who took on fuel on the road will have the advantage. The record is as follows:

No. 1—Frayer-Miller. Ferries, $1.68; average per passenger, 33.6 cents.

No. 2—Marmon. Mechanical repairs, 18¾ cents; ferries, $1.55; total, $1.73¾; average, 43.4 cents.

No. 3—Reo wagonette. Gasoline, 63¾ cents; mechanical repairs, 93¾ cents; ferries, $2.86; total, $4.83½; average, 44.9 cents.

No. 4—Reo runabout. Gasoline, 25 cents; ferries, $1.55; total, $1.80; average expense for the day, 45 cents.

No. 6—Compound. Oil, 5 cents; mechanical repairs, 37½ cents; ferries, $1.70; total, $2.12½; average, 42.5 cents.

No. 7—Compound. Tire repairs, 56¼ cents; ferries, $1.55; total, $1.55.

No. 8—Olds. Gasoline, 98¾ cents; mechanical repairs, 18¾ cents; ferries, $1.60; total, $2.72½; average, 68.1 cents.

No. 9—Wayne. Oil, 60 cents; mechanical repairs, 37½ cents; ferries, $1.68; total, $2.62½; average, 52.5 cents.

Again be it understood the above report for the first day's run will be entirely amended by tomorrow's official report of gasoline consumption.

The section of the rules under which the above charges are made is as follows:

37. Observers shall report charges as follows: Hotel and general expenses, no charge; gasoline, 25 cents per gallon; lubricants, 60 cents per gallon; time of engine or general repairs, 60 cents per hour; time of tire repairs, 50 cents per hour, charges to be assessed in respect to any occupant of the car who assists or any repairman en route; punctures of inner tubes, 75 cents each; puncture of shoes, no charge; blowouts of inner tubes, 75 cents each; blowouts of shoes, no charge; time to inflate inner tubes or replace same, 50 cents per hour; new parts, catalogue price; chain repairs, 50 cents per hour and catalogue price of new links; all moneys paid for any purpose, such as legal fines, bridge tolls, ferry charges and necessary fees of all description.

A balmy Indian summer day was vouchsafed by the clerk of the weather for the run. The route was by ferry to St. George, a fine highway across to Staten Island. Splendid roads, except a bad bit

New Reo Bus in the Economy Test

Digitized by Google

of cobblestones toward the end to Camden, and ferry to the Quaker City—102 miles of road in all.

Each car carried a merry complement of passengers, out for fun. Unofficial observers on the front seat and the placards on the vehicles gave the only indication that the test was more than a mere pleasure jaunt. All hands entered into the joy of the day and trip, took things easily and did not stint the time set apart for lunch. There were four women on the run. Two of them were in the jolly party of ten Ray Owen had out in the Reo wagonette. The performance of this car was watched with interest, as it was its trial trip and the first official demonstration of a long-distance passenger bus. No attempt was made to force it. It bowled along easily at 15 miles an hour and took all the hills without trouble. A lost master link cost it 25 minutes. This was its only delay.

The cars are housed for the night in the White garage on North Broad street. The tourists are making merry at the Walton tonight, but will make an early start on the return trip tomorrow.

Three official cars, a White, a Franklin and a Maxwell, manned respectively by E. T. Fitch, the referee; F. Ed Spooner and Nathan Lazarnick, of photographic fame, accompanied the run. The details of the test were well worked and carried out. The main officials in charge were: E. T. Fitch, referee; W. J. P. Moore, chairman of the contest committee; and A. B. Tucker, secretary and general manager.

It is certain that the railroad will be beaten by the motor cars by more than one-half. The only mishap of the day befell W. H. Harrison, of the New York Tribune, who was thrown out of the Oldsmobile as it rounded a corner at New Brunswick at high speed. Harrison was standing on the dos-a-dos platform as the turn was made. He was cut on the head and hands and otherwise bruised enough to compel his return to New York tonight, though he pluckily insisted on completing the run to Philadelphia.

SECOND DAY'S TEST

New York, Oct. 31—Special telegram—The eight cars which were survivors at Philadelphia also completed the second day's run and will start for Albany tomorrow morning. The Graham Compound was still missing, and thereby hangs a tale of heroic perseverance. It stripped a gear at 1:18 o'clock yesterday afternoon at New Brunswick. Graham had no idea of quitting, so wired the Middletown factory to ship a new transmission to New York. It was met at the Grand Central depot and hurried by automobile to the Pennsylvania depot, and thence by train to New Brunswick. By 9 o'clock the car was ready for a fresh start for Philadelphia. Trenton was made all right, but 12 miles east of Burlington the car ran into a ditch in the darkness and was wrecked. At 2 o'clock a belated trolley car came up and was boarded for Burlington, where the night was passed. Bright and early in the morning the heroic crew returned to the wreck, leaving the observer behind them, to be phoned for later. It was the intention of the relief party to get the car back to New York, repair it and make still another start in the test. Up to 10 o'clock tonight no word had been received from the wrecking crew.

Despite three ferries to be crossed, the finish of the first six cars was phenomenally close and as follows in elapsed time: No. 6 in 8:18, No. 4 in 8:19, No. 9 in 8:22, No. 2 in 8:23, No. 3 in 8:24, No. 1 in 8:31, No. 8 in 9:33 and No. 7 in 10:49.

Owing to the tanks not being filled until the following morning, only the gasoline record of the day before is available. It is now possible to correct the imperfect results of Monday, sent MOTOR AGE last night. The following is the record of all of the survivors except No. 1, of which later.

No. 2—Gasoline, $2; oil, 20 cents; total fuel, $2.20; average, 54 cents; total all expenses, $4.96; average, $1.24.

No. 3—Gasoline, $2.18¾; oil, 25 cents; total fuel, $2.43¾; average, 24 7-10 cents; total expenses, $5.58; average, 55 8-10 cents.

No. 4—Gasoline, $1; oil, 7½ cents; total fuel, $1.07½; average, 26 9-10 cents; total expenses, $2.62½; average, 65 6-10 cents.

No. 6—Gasoline, $1.50; oil, 85 cents; total fuel, $2.35; average, 45 7-10 cents; total expenses, $4.42½; average, 88 1-10 cents.

No. 7—Gasoline, $1.53; oil, $1.07; total fuel, $2.60; average, 65 cents; total expenses, $5.20; average, $1.17 8-10.

No. 8—Gasoline, $1.65⅝; oil, 3¾ cents; total fuel, $1.69; average, 42 2-10 cents; total expenses, $4.38; average, $1.09 2-10.

No. 9—Gasoline, $2; oil, 60 cents; total fuel, $2.60; average, 52 4-10 cents; total expense, $4.52½; average, 70 5-10 cents.

No. 1, the Frayer-Miller, did not require any further supply of gasoline or oil for its tanks, and no record can be had of its fuel consumption until a filling is asked. It will be seen by the above report that of the cars recorded the Reo runabout and wagonette are far ahead of their rivals in average cost of fuel and total expenses per passenger. Through an error in the figures given out yesterday 65 cents was wrongly charged against the wagonette. This has been deducted in the above record by the officials in charge.

Of today's expenses the only figures attainable for reasons already stated are those for ferry charges and mechanical and tire repairs. The Marmon was charged with 18¾ cents for mechanical and $1.12½ for tire repairs. Compound No. 7 had to put in a new shoe at a cost of $28.50.

The star performance of the day was the run of the 16-horsepower Reo wagonette with ten passengers, weighing 1,500 pounds in all, from Trenton to Perth Amboy, a distance of 43½ miles without a stop, in 2 hours 10 minutes, an average of 20 miles an hour. The 8-horsepower Reo runabout accompanied it on the run and scored the same time.

The only mishap of today's run was the collision of the Wayne with some sewer piping in avoiding a collision with a four-mule team, whereby two spokes of a rear wheel were broken. The car succeeded in completing the run with its crippled wheels. Referee Fitch ruled that a new wheel could be supplied without any penalty to the Wayne on the ground that it was an unavoidable accident. Tomorrow's run goes to Albany by way of Yonkers, Tarrytown, Poughkeepsie, Hudson and Greenbush, returning by the same route. Then the cars journey to Southampton by way of East Thirty-fourth street ferry, Jamaica, Valley Stream, Rockville Center, Freeport, Massapequa, returning by way of North Shore. In this test great stress is laid on rule 44 which compels drivers to pay heed to the rules of the road. So far no one has violated any of these, everyone being content to follow a sane pace. The rule in question says: "Drivers mut be familiar with the rules of the road, and the current automobile laws of the states of New Jersey, New York and Pennsylvania. Each must be familiar with the speed limit regulations. Fines after arrest for breaking speed limit regulations shall be charged against the car. The act of fining is considered to establish blame on the part of the driver so far as this test is concerned."

ECONOMY TEST CARS LEAVING THE FERRY AT STATEN ISLAND

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office—
American Publication
Bureau 55 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the Trade Press Co·N H Van Sicklen
Manager·Telephone Harrison 4410

Member National Association of Automobile Manufacturers Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year·Foreign subscription four dollars
The Western News Co·of Chicago and its branches supply newsdealers·Entered at the Chicago postoffice as second class matter

THE AUTOMOBILE AND ACCIDENTS

IT HAS been the custom of municipalities for the past several years to keep a fairly accurate record of the accidents which occur upon city streets, charging each particular class of vehicles with the accidents for which it is responsible. The published reports for the past few years in this country and the past decade or so abroad fail by far to give to the motorphobist the least particle of consolation; in fact, the motor car can now be classed as a safe vehicle, all things considered.

The most accurate figures come from London, where vans, hackney carriages and the like are licensed and numbered the same as are motor cars. In the past 9 months ending with September the number of accidents charged to means of transportation other than motor cars operating on the city's streets was enormous, as the figures recently published show:

	Accidents	Injuries	Killed
Tram cars—			
July, Aug., Sept., 1905...	250	102	39
Six months previous.....	459	239	84
Total	709	341	123
Horse-drawn vehicles—			
July, Aug., Sept., 1905...	1,101	467	102
Three yrs. 1 mo. previous.	11,753	8,205	1,152
Total	12,854	8,672	1,254

The showing for the 9 years from 1896 to 1904, inclusive, was even worse for the horse-drawn vehicles:

Automobiles, average number accidents per annum	142
Horse-drawn vehicles, average per annum	6,667

With the number of automobiles constantly on the increase it is not strange that there should have been some change in proportion, for the use of horse-drawn vehicles fell off somewhat during the past 4 years, while the number of automobiles found to be in use on the streets increased largely:

Automobiles, average number accidents, past 4 years.....	294
Horse-drawn vehicles, average per year, past 4 years.....	6,361

As a matter of fact, however, these figures are not of as much value as others, for the number of horse-drawn vehicles is not accurately known, except so far as public conveyances are concerned. Even here the automobile makes a remarkable showing and puts to shame the twaddle pumped into the public by the anti-motoring press. The figures following are for the year 1904. That year there were in London 11,057 hackney carriages for hire, and these were responsible for 1,286 personal injury accidents, an average of one accident to every nine hackneys. During the same time there were registered 8,380 automobiles, which were held responsible for 557 personal injury accidents, or an average of but one accident to each fifteen automobiles. In Birmingham during 1904 there were fifty-four accidents chargeable to automobiles and 746 accidents chargeable to horse-drawn vehicles.

Now comes Chicago, the hotbed of strikes, motorphobia, yellow press and other unpleasant things. The published reports are by no means comforting to the motorphobists. For the purpose of placing the motor car in as unenviable a light as possible the classification relating to horse-drawn vehicles has been split up to make it appear that the automobile has done its share of destruction. As a matter of fact, however, the automobile was responsible for only 158 accidents of all sorts during 1904, and only one person was killed. On the other hand, horse-drawn vehicles were responsible for 621 accidents, and in this number is included thirty-seven deaths. Still worse is the work of destruction of the street cars, which caused eighty-nine deaths and a total of 2,014 accidents. The full table follows:

	Killed	Injured	Total
Horse-drawn vehicles...	37	584	621
Bicycles	1	24	25
Street cars.....	89	1,925	2,014
Motor cars.....	1	73	74

In the name of all that is decent, all that is reasonable, can any municipal officer of any community grin with satisfaction at his warfare on automobiles and automobilists when perusing these figures?

The French people have been through this mill; they have fought it all out, and the authorities there can give the American officials so much advice on how to handle street traffic that the American could not help feeling that he had a good deal to learn. In Paris speed laws are practically unknown, but the individual is held responsible for any damage he does, as young Eliot F. Shepard, an American, found when he was sentenced to pay a heavy fine and spend several months in jail as a result of killing a person. As a correspondent of MOTOR AGE points out, no speed laws will prevent accidents. To quote from his letter:

> A safe driver needs no law; a reckless driver defies every limit. A man may run his motor car at 40 miles an hour and yet be careful and safe; again, he may be inexcusably careless, even reckless, at a speed of not more than 3 miles an hour. It is all a question of care, of place and of circumstances, and not a question of speed limit. Take away the fun-loving fiends, abolish the technical, definite speed limit, and make every operator of an automobile and every driver of a team responsible, under severest penalties of imprisonment, according to the degree of the offense, for every accident or injury he may cause.

The entire story is told in the few lines above; the remedy for the speed evil is given, and it is up to the authorities to pass laws that will govern the situation the way it ought to be governed. The whole trouble is that graft is so imbedded in all municipal fabrics that laws are enforced that suit a purpose best, regardless of justice and the rights of all classes.

The most damnable and most dangerous monster is the trolley car, running as it does anywhere from 10 to 30 miles an hour in crowded streets and past intersecting thoroughfares with little or no warning of its thundering approach until it has committed murder.

There has been a mass of jumbled laws passed in various sections of the country. Some are reasonable—95 per cent of them are unreasonable. Most of them are useless or inconsistent. The laws that will fit one city will fit another; that which will fit one rural section will fit another; that which is reasonable to one motorist will be reasonable to all; there are no varying conditions worth mentioning.

That is what must come in the end. The mass of jumble now called laws must go if the motor car and its driver is to be held to account for his recklessness or his carelessness.

CHANGES NECESSARY IN ROAD RACING

ROAD RACING in America is to continue; that has been settled. It was not so settled the day before the Vanderbilt cup race was run. The catastrophies which resulted in the pursuit of track racing had put a damper on racing in all forms and it only needed a little wind to kindle the spark into a blaze. Had there been a single fatality among the contestants in the Vanderbilt cup race it would have ended such contests. Happily the race was completed without such result. There were times, however, when it seemed as if it would be impossible to avoid killing a score or more of people.

If the race is to be continued it will be found that the entire scheme must be gone over and beneficial changes must be made. With the increasing interest in automobiles and such affairs as the Vanderbilt cup race, another year will possibly see a quarter of a milion people on the course. Some means must be taken whereby such an immense throng must be kept absolutely away from the danger line, and the danger line extends on either side of the road for a distance of several rods.

If the race is to continue there must be material changes in the rules, else the manufacturers and other owners of racing cars will not have the heart to go into the contest with a considerable chance of having their entries thrown out after having demonstrated the ability of their cars to go the distance at a reasonable speed. There should be an early settlement of this particular point, inasmuch as it takes a long time to construct racing cars fit to represent this country against foreign productions. The question of guarding the course can be left open for some considerable length of time.

Digitized by Google

Traveling private automobile shows ought to prove immensely popular—with the railroad companies.

There is one thing about an economy test that is commendable—the participants spare no expense to make a good showing.

The beautiful part of getting sample cars out early and selling them is that the attendants at the shows will be enabled to have a good time.

Boosting foreign and knocking home-made automobiles and automobiling is the sort of consistency with which the average American daily paper is blessed.

Notwithstanding horse shows, football games and other seasonable affairs, the automobile by no means has been forgotten—by the police and dinky administrators of justice and injustice.

Pretty nearly all the old cycling stunts—including the dead broke tour—have been performed by motorists. The man who will reach the north pole in a motor car will find himself amply rewarded with glory, however.

It's a pretty tough rap at home talent for the prince of Wales to select an American for chauffeur for his trip to India, and this on top of the fact that King Edward's chauffeur is an American. But the prince did select an English car.

If Czar Nicholas II should make his escape from Russia in an automobile it would not be among the impossibilities. Such a trick would be a good boost for automobiling, and, by the way, this is a hint for some enterprising manufacturer to do an advertising stunt.

By the time Percy Megargel has completed his out-west and back-east tour he will be fitted to stand a trip to the arctic regions or to—the equator.

THE WEEK IN BRIEF

Senator Morgan makes up card for Ormond-Daytona beach meet, reducing number of events to seventeen, with fifteen of them championships; feature to be a 2-miles-a minute race.

Britons regard Vanderbilt cup race as proving that America's progress in automobile construction, while only what was to be expected, is not enough to scarce them.

Percy Megargel, transcontinental tourist, reports his arrival at Burns, Ore.; he is given scare in mountains by runaway hauling load of dynamite.

New York's constitutional amendment, which comes up at next election, provides for expenditure of $50,000,000 on good roads.

Recent additions to New York's row show that cost of Gotham's garages, when all done, will run into millions.

Cadillac Automobile Co. and Leland & Faulconer Mfg. Co. merged into Cadillac Motor Car Co.

De Dietrich's American branch is closed; valuable cars go for song at receiver's sale.

E. R. Thomas planning trip to Paris show; will make up party of Americans.

Reports from England show France is gaining foothold in United Kingdom.

It is a pretty hard slap at the horse to have automobiles line up at a horse show the way they did at the affair held last week at the Coliseum in Chicago. Likewise, this is a jolt for the motorphobist from which it will take time to recover.

Americans needn't think they're so much ahead of the world—Leipzic has already held its 1906 show.

Now that John Farson is slated for president of the American Automobile Association, red will be the prevailing color in automobile bodies and upholstery.

France may drop the road racing game, but after it has been out in the cold one short season it will be glad enough to come in and toast its shins by the fireside.

While the automobilist goes on giving figures to show that the motor car is by no means as dangerous as the horse-drawn vehicle, the police go on with their process of extracting coin from the automobilist.

State Senator McKee of New Jersey, has drafted a bill which starts out with "Any man driving an automobile in a drunken condition will be liable to summary arrest." Intoxicated cars would better steer clear of New Jersey.

Toot-Toot is the name of the official organ of the California Woman's Automobile Club and the San Francisco Motorcycle Club. To add to the excitement, it is published by the Gabriel Printing Co. The initial number is just out and it is declared that this is not the last toot, either.

The only machine that failed to finish in the German commercial trial was an old beer van, which kept up with its load until the sixth and last day. That's going some at that, for anyone who can carry a load for nearly a week, while hardly eligible for a blue ribbon, should receive favorable mention.

Last Week Chicago Held Its Annual Horse Show—The Horses Were All Inside the Coliseum, However

Digitized by Google

SCARE FOR MEGARGEL

Tourist Runs Afoul of Freighter Loaded With Dynamite—Horses Run Away

Burns, Ore., Nov. 1—Special telegram—The Reo Mountaineer pulled into this place last night, and this afternoon we head for Prineville. Burns is rather lonely, being 150 miles from a railroad. With the departure of the Reo Mountaineer from Boise City all communication from the outside world was cut off for some time, as after leaving Ontario we left the railroad and telegraph line and struck off across the mountains to this point, following the old wagon trail now used by freighters and their six, eight and ten-horse outfits.

Speaking about freighters brings back to my memory a little adventure we had with one last Sunday. We were slowly winding our way up a narrow mountain pass when we encountered a four-horse freighter coming down the steep grade. Luckily there was a little level stretch in which two teams could pass and I pulled the Reo to the side of the road—the side next to the precipice—and stopped. The freighter descended from his high seat and after looking over the situation returned to his perch and drove on toward the automobile.

Everything went well until the leaders were within a dozen feet of the silent machine, when they suddenly wheeled and, dragging the wheel horses with them, turned completely around in the narrow road. The driver, expecting his vehicle with its two tons of baled hay to upset, jumped and dropped his lines. Strange as it seemed, those four horses succeeded in turning that wagon and its load completely around in that narrow 12-foot road and commenced to run up the hill. A telephone pole, which was badly shattered in the mix-up, brought the truants to a stop and the teamster caught his horses before any damage, other than a broken whiffletree, had been done. He told us afterward that there were 100 pounds of dynamite on the wagon under the hay, and what might have happened to the Reo Mountaineer and its crew had this exploded when the wagon struck the telephone pole can only be surmised.

All easterners have read of the wild, or rather half-wild, western cattle that roam the prairies in this section. It is the custom to allow the herds to run wild all summer in the mountains and to hold a round-up in the fall. Each owner then drives the critters bearing his brand down into some valley for the winter months. Between the old toll gate and Boise, a stretch of 50 odd miles over the mountains, we ran through a drove of some 3,000 head of these wild cattle being driven in sundry small herds and bunches toward the Boise valley for the winter.

At Boise we added to our equipment. Thick sheepskin gloves, high laced waterproof shoes, heavy sweaters and heavy underclothes have been added to our wardrobe for the 700-mile drive over the Blue and Cascade mountains to Portland. Reports from all along the route say that there is from 6 inches to 2 feet of snow on the passes, and the unbanked turns—in many cases very sharp—are more or less dangerous to take with an automobile. With our equipment of tire chains, sprags, windlass and cable, Bailey won't-slip tires, etc., we feel confident that we can take the Reo anywhere horses can drag wagons, and despite the stories of impassable passes, exaggerated in many cases no doubt to frighten tourists, both Fassett and myself feel confident of getting through with our Lansing product.

The set of four original Diamond tires that brought us all the way from New York were exchanged for new ones here. This is the first time we have changed our tires on the trip, and it was done more as a precaution than because necessary. In the center of Oregon, over 100 miles from a railroad, would be a bad place to have tire trouble, so we are taking no chances. The original set of Diamonds will be returned to the Akron factory, recovered and again put on the wheels of the Reo Mountaineer ere it returns to New York city.

SAMPLE OF IDAHO MOUNTAINS

Our sand tires, used once in Wyoming and once in Idaho, will be freighted to Portland, as we will have no further use for sand tires until we get in the vicinity of San Francisco. They proved most useful, though, on the two times they were used, and it would have been impossible to have got through without their aid, especially on the 7-mile stretch of sand between Ross Forks and Blackfoot, when it was almost impossible to travel without them.—PERCY F. MEGARGEL.

SLOWS UP SPORT BOOM

Failure of Foreign Motor Boat Campaign Checks the Growth of Water Pastime

London, Oct. 21—It would really appear as though the motor boat movement has had a severe check—at least the racing section of it has. Last year France in particular effervesced over motor boat racing. Cross-channel, cross-Mediterranean, Paris-to-the-sea, and Arcachon were merely leading items in a large and eagerly filled program. On our side we had big regattas in Southampton roads, at Burnham-on-Crouch and other places, and it was confidently expected that motor

OLD MAN OF THE MOUNTAINS

boat racing would experience a big boom in 1906. But it has been anything but that. In France it has been akin to a fizzle, thanks, no doubt, to the disastrous result of the cross-Mediterranean race, which practically wiped out France's latest developments in high speed motor craft. And our own program has not been much better. Last year's excitement was too intense and feverish to last—the movement necessary to make the new boom possible, and the result has been that, with but scanty additions to marine motor racing ranks, the season has been quiet even to was overdone. But land motoring was too engrossing for those who had the money disappointment. But for the presence of the Napier boats, all built last season, very little attention would have been attracted to the movement in England, while, despite activity on the part of leading French motor makers, it has been almost moribund over there. The Paris-to-sea race, which was such a sensation in 1904, was a walkover for a comparatively small boat of no real pretensions. No French competitors to the English Napiers could be found at Arcachon, in the Harmsworth race, and at the Burnham-on-Crouch motor boat meeting, which has just wound up the British automobile club's 1905 sporting program. While there was an abundance of events spread over 3 days, competition was almost absent. Indeed the meeting was so ill supported that it had

Digitized by Google

to be postponed in order to permit the English boats racing at Arcachon to get back to swell the lists. It was well it was so, for there was little else to see in the way of sport. It is to be feared that motor-boat racing is not a popular form of sport at the moment. It is slow to watch and expensive to exploit. But then it makes more moderate demands on the enthusiast's purse and when there are not so many land distractions for the motorist it will probably have a look in. Meanwhile the pleasure side of marine motoring is going ahead, but it, too, is cramped by reason of high prices at the moment for satisfactory articles.

Over here they are keeping an eye on the healthy complexion of the sport on the other side of the pond. While America has not attempted anything in the line of international competition, she seems to have hit the right idea with her regattas and especially the long tour to the Thousand Islands, which made an impression on motor boat enthusiasts here. It was regretted that neither the Challenger nor Dixie came over to compete for the Harmsworth cup. France's case of cold feet, which marred what ought to have been a brilliant international event, and America's withdrawal, although anticipated, disappointed those who had heard so much of the speed shown by Brokaw's and Thomas's creations. Harmsworth is going to try again next year and will renew his trophy, which this season was taken by Napier in that much-to-be-regretted fluke race, and it is anticipated that during the winter months France and America will be able to compete.

Cecil Edge on Top Speed Test

EXPORT TRADE GROWING

Washington, D. C., Oct. 30—The export record is growing with every succeeding month. During September automobiles and parts to the value of $194,499 were shipped to various foreign countries, which is a big gain over the shipments for the same month of last year, when the foreign shipments were valued at $123,487. For the nine months ending with September these exports were valued at $2,235,633, as compared with a value of $1,445,986 and $1,192,829 for the corresponding periods of 1904 and 1903.

DO WELL IN ENGLAND

Season's Report Shows French Makers Have Gained Strong Footing in Kingdom

London, Oct. 21—Although we are practically within hail of the Olympia show, quite a lot of uncertainty appears to exist regarding not merely the new features to be disclosed but the very prices at which the new season's trade is to be campaigned. Bringing forward the date of the show from February to November, on top of a long-drawn-out trading season, and the uncertainty created by the Tourist trophy race and its possibilities, have caught British motor car manufacturers napping while the foreign section of exhibitors are hampered by the fact that their headquarters arrangements have all been built on the Paris show date—a fortnight later than Olympia. But such disturbances always precede a big show and always leave little or no trace when the show is held; therefore little real attention is paid to them. Everybody will probably be ready in time, for the issues are too momentous to admit of failure through mere lack of working hours. In the course of making inquiries on these matters the writer has been able to arrive at a very fair idea of the trade done in this country by the leading French houses, and as the figures will no doubt interest manufacturers on your side they are given. First of all come the Darracqs, whose total of imports runs to 971 cars in the year ending September 30 last. This is almost 50 per cent more than the Darracq trade of 1904 and the increase is probably due to having been very early in the field with stylish cars in which ample power was given at prices that looked very low until the remainder of the French makers came out with their lists. But the cars have been soundly handled and on the whole have given satisfaction. The next firm in point of numerical order is undoubtedly Panhard & Levassor, whose total cannot be given exactly, but it is in the region of 800 cars. These represent a higher aggregate value than Darracqs, as the prices are individually higher. Next come the Clement-Talbot cars, the great majority of which have been imported, despite the fact that the company has a large factory in London. Its total is about 700 cars, and it is doubtful if more than one or two really British firms have individually exceeded that total. Then De Dions weigh in with 576 cars, most of them of the single-cylinder type, and then Peugeot with 400 and Gladiator with something less, stand out clear from the remainder of the crowd. Renaults, C. G. V.s and Mors have done well, but their prices are high and quantities are in consequence restricted. As all these concerns are mapping out next year's trade in this country on more extensive lines, it needs little argument to show that the British manufacturer has a long row to hoe before he can capture the market they have secured on his doorstep. And when America joins in, as we confidently expect it to do in a few years' time—or less—things will be a trifle lively.

The De Dion cars for 1906 have not yet reached this country, but the writer is able to state that they will run into six distinct patterns, starting with an extra cheap 6-horsepower type. This, however, will not be ready before June. It will be, in common with the ordinary 6-horsepower and 8-horsepower, a single cylinder with the patent De Dion expanding clutch gear change. A 9-horsepower type will also have a single cylinder, but the gear in it, as well as in the 12 twin cylinder and 15 and 24 four-cylinder cars, will be of the sliding pinion type.

Prince of Wales' Argyll Car

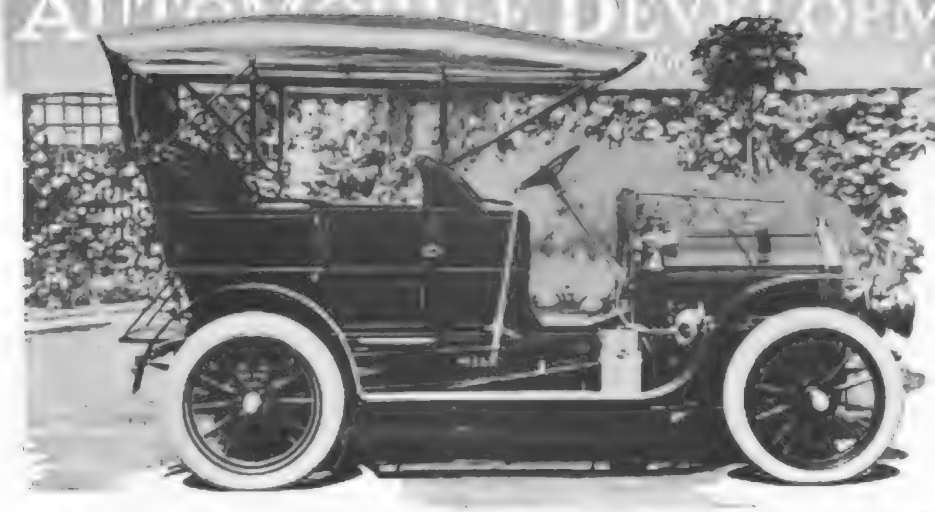
Harry S. Schuyler, an American, hailing from Philadelphia, and chauffeur of Consuelo, duchess of Marlborough, while she was visiting in America, has, upon her recommendation, been selected to drive the prince and princess of Wales on their motor trip through India. The car that royalty will travel in is an Argyll of the same make as the one which won the recent Tourist trophy race on the Isle of Man. It was ordered for the prince by the Earl of Shaftesbury and will seat seven people. It is painted in cream color and upholstered in blue, with a specially designed canopy with sun blinds and windows. King Edward also has an American driver, one Staunton, who put his O. K. on the application of Schuyler.

The people are still talking of the performance of Cecil Edge, who drove his six-cylinder Napier from Brighton to Edinburgh on his top gear, the 420 miles being done in 23¼ hours.

Digitized by Google

Automobile Development

The Great Arrow

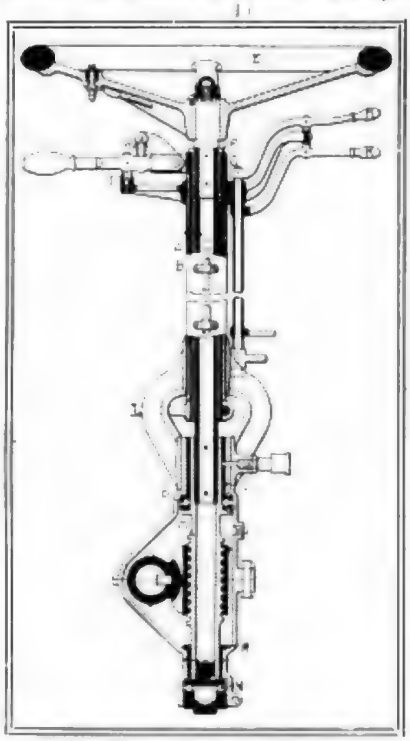


THREE models will be put on the market for next year by the George N. Pierce Co., of Buffalo, N. Y. One will be the well known 8-horsepower Pierce stanhope, and the two leaders a 28-32 horsepower touring car and a 40-45 horsepower machine. Both of these models are similar in practically all lines, the cylinder capacity of the latter being much greater as well as the other parts being considerably strengthened. In the line of changes over the Pierce Great Arrow that won laurels in the Glidden tour, the most noteworthy is the changes in the sliding gear set, direct drive on the high speed now being used, this is new with Pierce machines. Other changes are found: The inverted arched front axle has been replaced with an I-section bronze one, which, like the previous ones, has a heavy inverted arch between steering knuckles, with seatings on which the springs are clipped. The carbureter is altered in that the float is fastened to the stem and a ball valve used instead of a needle one. The shape of the mixing chamber is changed, it being a little higher. The following details are of the 40-45 machine:

The frame construction is made from pressed steel of 20 to 30 point carbon steel. The channel is 4½ inches deep in the center and tapers to 2⅝ inches at the ends. Three tie pieces unite the side members, each is of section similar to the side ones which they connect and is riveted in place and reinforced by angle plates. At the ends are other cross pieces. The front semi-elliptic springs are 40 inches in length and the rear ones 53 inches. The front ones are shackled at their rear ends—the shackles being above the springs so as to work under compression instead of tension so as to prevent the possibility of the spring flipping under the shackles and endangering the steering. The rear springs are shackled at the rear ends but positively connected at the front. The axle A has the flattened seating B, with the vertical center bolt E piercing the spring leaves C. The clip D bolts to projected flanges on the seating B.

Pierce bodies are of new design. Cast aluminum is used almost exclusively in their construction. Front seats are of the individual type. In the rear is accommodation for three passengers with baggage. The dash is dished and has solid brass mouldings and within it are two cabinets for carrying small articles. The wheel base is 109 inches.

The Pierce motor is a four cylinder one, with separately cast cylinders, the castings being flattened on the sides to admit of the cylinders being placed closely together, not making the motor length unduly long because of the four separate castings. In the 28-32 horsepower machine the bore and stroke are 4¼ by 4¾ and in the 40-45 horsepower model these measurements are 5 by 5½ inches. Each cylinder is an integral casting with the exhaust valves in ports on one side and the inlets in similar ports on the other side. The valves are interchangeable and have a diameter of 1 15-16 inches. The removal of them is a simple



THE PIERCE STEERING COLUMN

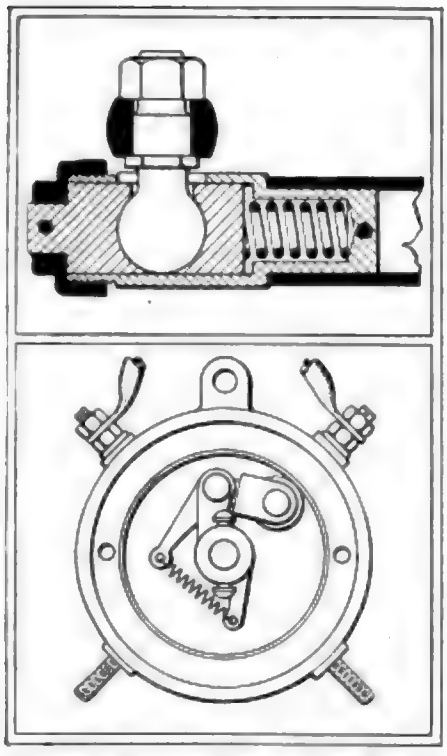
act, the screw A being removed, the cover B is loosely screwed in place and can be taken off by hand, after which the cover C is lifted out and the valve disclosed. The valve heads, beveled to 45 degrees, are not made integral with the stems but are riveted, screwed and brazed to the stems. The usual rollers are not found on the bottom of the push rods, but hardened steel shoes D are made use of, these working in renewable bronze guides E. The cam shafts are driven from the front end of the crank shaft, there being a small gear on the end of the shaft and above it another gear with which the two cam shaft gears mesh, the interposing of a gear between the one on the crank shaft and the two on the cam shafts permitting of the use of smaller gears.

The crank shaft is a solid steel forging with ground bearings throughout, running in adjustable bronze bushings. The shaft revolves on three bearings, two long end ones and a similar one between the middle cylinders. All of these bearings, as well as those of the crank pins, are 1 13-16 inches in diameter. The wrist pins are of steel, case hardened and ground and are secured by taper set screws. Marine type connecting rods, forged from steel and fitted with bronze bushings at both ends are used. The crank shaft bearing being carried on the top part of the crank case, the bottom part of the case can be removed for making examinations without dismounting any of the motor parts.

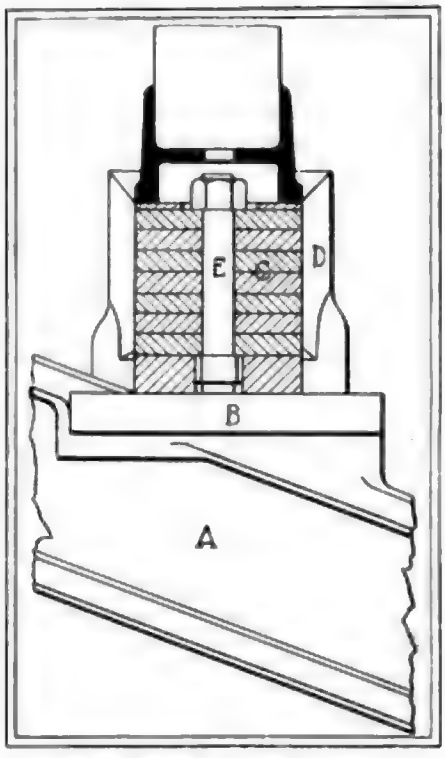
Motor lubrication is looked after with the greatest detail. On the bottom of the crank case is an oil pit F from which oil is pumped by the pump G and forced through the piping K to the oil reservoir L at the top of the exhaust side of the motor. The oil pump is driven by means of a worm from the cam shaft H. From the reservoir three pipes M, only one of which can be seen in the end section, but the three can be found in the side view, carry oil to the three crank shaft bearings. After passing through the bearings the oil enters the bored crank shaft at N, and by centrifugel force is carried to the crank pin bearings, lubricating them and then drops into the crank case, where it unites with the splash to oil the cylinder walls, the pistons carrying it for this purpose. The wrist pins are supplied also from the splash. It can be noted that in the top of the pipes M where they leave the reservoir are oil straining gauzes for the removal of dirt.

The commutator is of the roller type, and is placed vertically on a shaft between the third and fourth cylinders, and is driven by bevel gears off the cam shaft. The revolving contact is a hardened roller held against the casing by a coil spring so that long contacts with

Google



SPRING IN STEERING TIE ROD AND TIMER



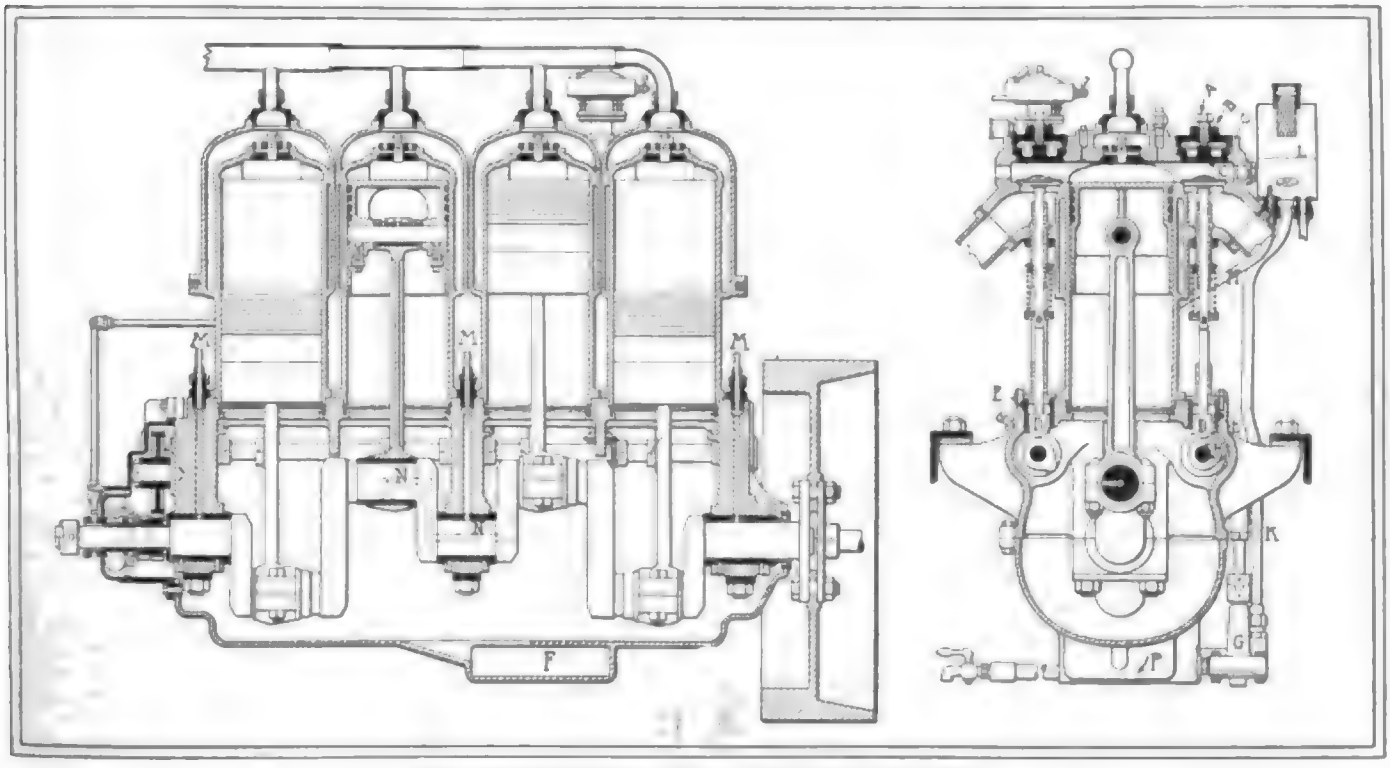
PIERCE FRONT SPRING SEATING

the stationary contacts are more certain. Current comes from a 6-volt storage battery with ten dry cells carried as a reserve. Five individual spark coils with vibrators on each are carried, one serving as a spare in case any of the others gets out of order.

The water circulation is maintained by a rotary pump, driven by a gear meshing with the exhaust cam shaft gear, taking its supply of water from the bottom of the radiator and delivering it to the water jackets at the lowest point. The water leaves the top of the jackets returning to the top of the radiator. A belt driven fan behind the radiator is used.

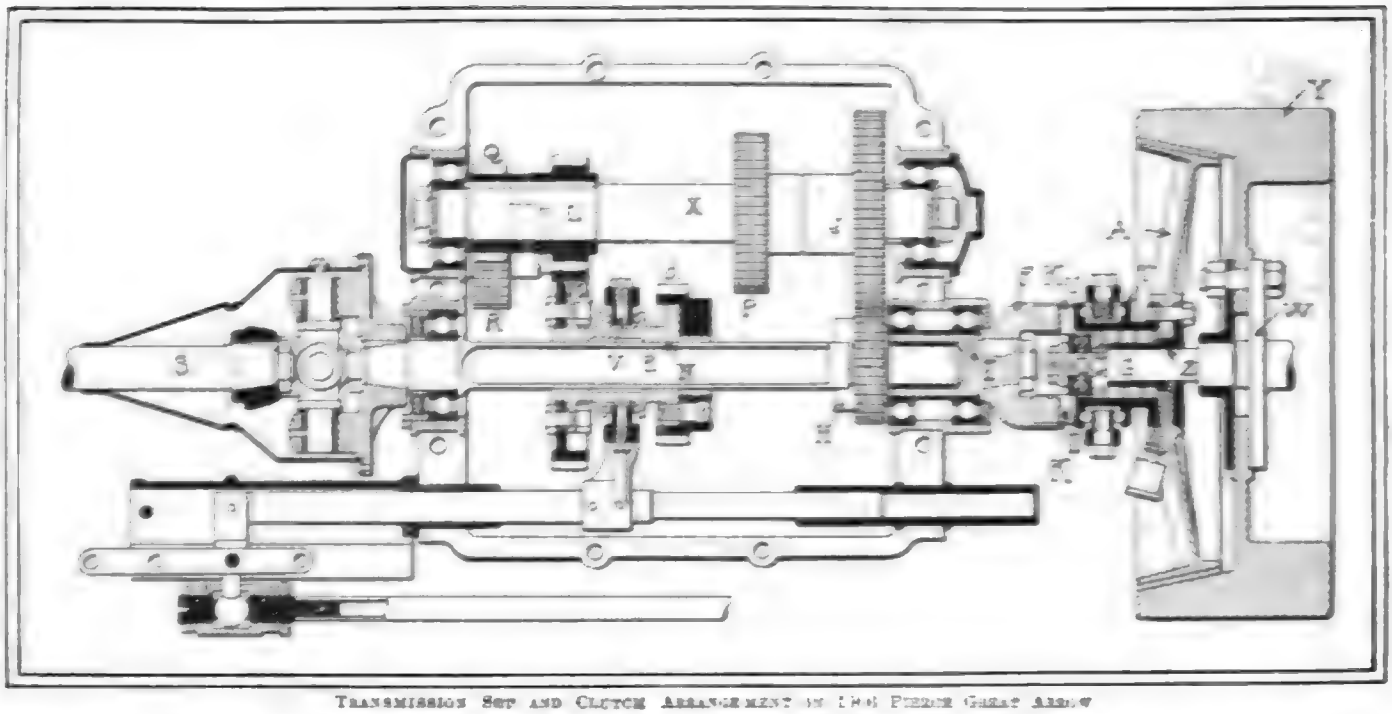
The Pierce steering column consists of three concentric tubes—A, forming the outside or supporting part of the column; B, the tubing to which the gear shifting lever D is attached; C, the central tube, to the top of which the steering wheel E is secured. Between these concentric tubes are suitable bushings, F at the top being between the central and middle tube and G between the middle and outer tubes. Near the base of the column, and just above the steering gear, is an expansion in the casing for containing the lever L, which connects with the gear shifting rod from the gear box. The shifting lever D has four positions, the forward one for the reverse, the neutral just behind this and the first, second and high speeds in order to the rear. On the under side of the lever is the wedge-shaped piece T for anchoring the lever in the notches in the quadrant, and a spring W on the upper side of the lever aids in holding the piece T in the notches. The lever D is slightly longer than the radius of the steering wheel. On the opposite side of the column are two levers, H for the throttle and K for advancing and retarding the spark. These are fastened to rods outside of the steering column and have levers at the lower ends connected up with the respective parts.

The steering gear consists of a multiple threaded screw M pinned at the upper end to the tubing C and provided with end-thrust bearings P and Q at its upper and lower ends. The screw has suitable bushing, R and S, at top and bottom. The upper bearings rest against a flange on the screw and the lower ones on a plate, plugging the lower end of it. Surrounding M is a nut N with trunnions on it, upon which are die blocks that slide within the jaws of a forked lever that carries the spindle connecting with the tie rods uniting the steering knuckles. This construction gives an irreversible steering gear, with none of the vibration of the steering wheels being communicated to the steering wheel. The column is in general design the same as that at present in use, but when mounted on the cars will be more inclined, lending a touch of rakishness to the vehicle. The eliminating of the side change speed lever facilitates



SIDE AND END SECTIONAL VIEWS OF THE 1906 PIERCE MOTOR

Digitized by Google



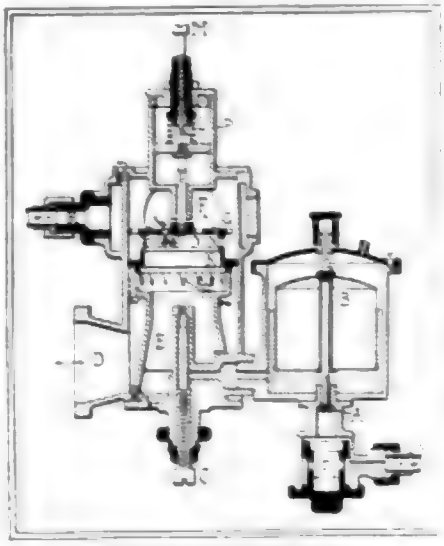
Transmission Set and Clutch Arrangement in 1906 Pierce Great Arrow

entering the front seats from the right side, the brake lever not interfering.

By far the most noticeable feature of 1906 construction in the Pierce transmission gear, is the use of direct drive on the high speed. Previously, Pierce transmission gears have been constructed with the propeller shaft to the rear axle in line with the counter shaft of the transmission so that on all speeds ahead the drive was transferred from the main to the counter shaft. With the present flexibility of motor speed, it is possible to run the car the most of the time on the high speed, and using direct drive on this speed, means, as well now proved, a material conservation of power. The use of Hess-Bright ball bearings throughout must also be added as one of the features of the transmission. These bearings are of the self-contained type, the balls being retained by an inner and outer ring, grooved suitably to form races for them. The balls are separated by short coil springs with leather washers between the ends of the springs and the balls.

The transmission gear gives three forward speeds and one reverse. Connection with the engine is through the fly wheel Y, which is suitably bored to receive the cone clutch A carrying a leather facing. The clutch part A is bolted to the sleeve Z which has a bearing on the extension G on the crank shaft which has a flange equal in size to the flange W on the end of the crank shaft and between these the fly wheel is bolted. The clutch is engaged through the collar B working on the hub T, ball thrust bearings being used between the collar and the hub, and the hub is in turn held by means of the screws to the clutch. The spring C bearing at one end against the clutch for holding it in engagement, at the other end bears upon a collar providing with end bearings D, the bearings being held on the shaft G by the nut U pinned in position. In taking the drive from the clutch A to the gear case, a master gear H is made integral with the sleeve I to the end of which is keyed the claw clutch F, having two fingers which engage in slots K in the end of the hub T of the clutch. This arrangement allows the clutch to be moved along the extension G on which it rests when out of gear.

Within the gear shaft case is the main shaft E having its front end bearing within the sleeve I and the gear H and its rear bearing at the back end of the case beyond which it carries a universal joint connecting with the propeller shaft S to the rear axle. On this shaft, which is squared, is the sliding unit comprising two gears M and O both bored to the sleeve N. This unit can be moved backwards and forwards by the end thrust collar V attached to the sliding rod in the side of the case. A noticeable feature in connection with this rod is the adjustable ball joint connection between it and the gear shifting rod outside the case. For high speed, the sliding unit is carried to the front of the case so that the four projections on the front face of gear O mesh with recesses in the rear face of gear H, thus locking the shaft E with the sleeve I and the clutch A and causing the shaft E to revolve at the same speed as the crank shaft.



The Pierce Carburetter

For slow speed ahead the gears are meshed, as shown in the illustration; gear J on the countershaft X meshing with H and the countershaft gear L meshing with M. It must be remembered that the gears on the countershaft are keyed in position, revolving when the shaft revolves and not being slidable on the shaft. To study the speed ratio on the slow speed can be easily done. The gear H has twenty teeth, while J has forty, causing the shaft X to revolve at half the speed of the motor. The gear L with 18 teeth meshes with M, having 32, so that the shaft X revolves 1.77 times while the shaft E makes one revolution. When traveling on low speed then, the engine shaft makes 3.54 revolutions while the shaft E makes one.

For second speed ahead the gear O is meshed with gear P, and as both of these gears have the same number of teeth, the shaft E revolves at the same rate as the shaft X, causing the shaft E to travel at half the speed of the crank shaft. When reversing, gear M is meshed with gear R. The latter is an idler on a separate shaft in the bottom of the gear case and is in constant mesh with gear Q on the countershaft, and being interposed between gears Q and M gives the latter a reversed movement.

Careful construction is a feature of the gear case throughout. This can be noted in the caps which fit over the front and rear ends of the countershaft X, making it impossible for dust to reach the ball bearings. The latter are retained in position by means of a castellated nut which holds a washer firmly against the bearing rings.

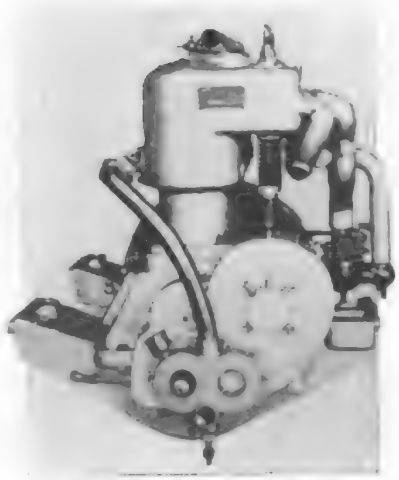
The gear shifting rod is interconnected with the clutch A, making it impossible

Digitized by Google

to strip gears in changing speeds. This is accomplished by having the gear shifting rod extended toward the front with holes in the extension part corresponding with the different gears. Into these holes drop bolts. A bolt is connected with the bell crank lever moving the clutch so that when the clutch pedal is depressed, the clutch is thrown out and the bolt withdrawn, permitting of the gear shifting rod being moved by the changing lever. Should the pressure on the clutch pedal be released before the gears are in mesh the bolt will bear on the gear shifting rod, not letting the clutch into engagement until the bolt drops into the hole in the rod.

The transmission of power from the gear set to the road wheels is through the jointed propeller shaft S, part of which is shown in the section of the gear case. Each end of the shaft carries a universal joint, one of sliding patterns for shortening the longitudinal length of the shaft when the springs are depressed. In the rear axle, of the live type, the drive shaft is divided in the center, each half carrying one of the bevels in the differential. Ball bearings are universal, both for carrying the car and taking up end thrust. The differential runs in oil.

The 1906 Pierce carbureter is altered in a few respects from the one in use this year. In this connection the ball valve A on the bottom of the stem carrying the float B is used instead of the needle valve previously, and the action of the opening and closing of the valve is simplified in that when the float rises the stem being rigid with it is raised and the fuel passage closed, whereas in this year's type a pair of lever arms are used at the bottom of the float on which it rests, thus raising the stem which is not fastened to the float, but moves freely in the center of it. The adjustment of the needle valve C is most accessible. A slight change is found in the height of the space E through which the air travels after entering through D. The space E is slightly contracted so that the inrushing air is better directed against the head of the nozzle. In ordinary running the air and gasoline, after mixed above the nozzle, pass through the holes W in the top of the valve G and pass out through opening F to the motor, but when the motor suction increases enough mixture cannot pass this way to satisfy the motor and the valve G is raised against the tension of the spring L within the dash pot P, and air passes through the triangular openings H, the part of the valve G, shown at K, having been raised the holes H are gradually uncovered. In uncovering these holes the smaller part is uncovered first, and as the spring L is pressed together and greater force is needed to press it still further, the openings H widen so that a very slight raise of the valve part K will let in more air than similar raises when the valve is just starting to uncover the holes. It is understood that when the motor is running very slowly the valve G is much lower than shown in the illustration, in fact, the top of the valve rests on the shoulder, so that all mixture passes through the holes W, but with a little greater motor speed the valve G is raised and the radial holes N uncovered and



End View Milwaukee Motor

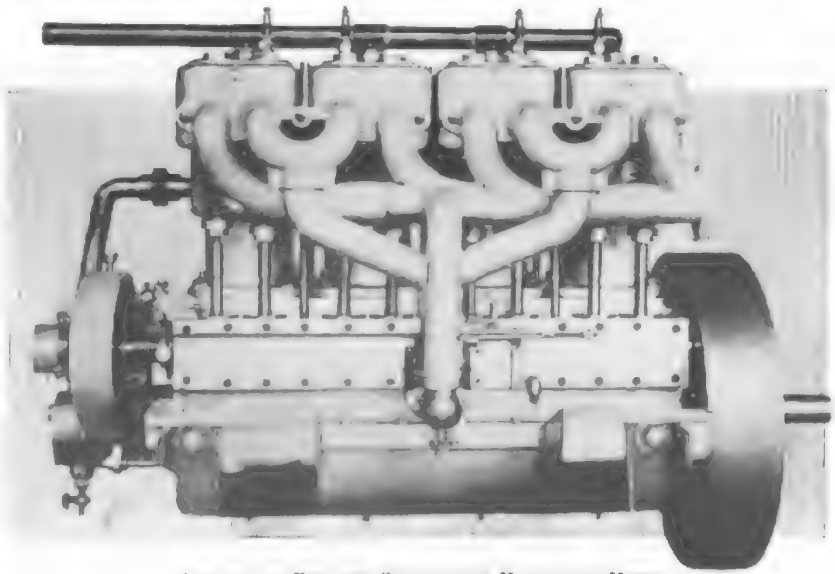
more mixture passes, but with still greater speed the valve is further raised and the V-shaped series of holes H gradually uncovered, and air that does not pass by the spraying nozzle is admitted through them. By thus taking air to the motor that does not pass by the spraying nozzle the suction on gasoline in the nozzle is slightly reduced and too rich a mixture at fast motor speeds avoided. The dash pot piston Q, solid with the shaft T, is used to prevent fluctuations of the valve G, the dash pot with air pressure above and below the piston makes the movements of the valve much more gradual. At the top of the carbureter is the adjusting screw M by which the tension of the spring L can be varied and the amount of pressure to lift the valve G varies. With a compressed spring more motor suction is needed and with a slight compression of the spring less is needed. The mixing chamber is heated by exhaust gases entering through the passage R.

The brake drums on the rear wheels serve for both the regular and the emergency brakes, the inside of the drums being used for internal expansion brakes, foot applied, and for general use, and the outside for the lever—applied emergency brakes. The emergency bands are made of steel, with bronze lining, and are pivoted at the bottom, both top ends being drawn together by a toggle joint arrangement, the internal bands, or shoes, are also pivoted at the bottom and are expanded by a cam. In both sets coil springs normally hold the bands away from the drums. Both sets are interconnected with the clutch, the latter being disengaged with brake application.

MOTOR MADE IN MILWAUKEE

A 36-horsepower gasoline motor especially designed for use in commercial vehicles and large touring cars is being manufactured by the Milwaukee Auto Engine & Supply Co., of Milwaukee, Wis. It has a bore and stroke of 4½ by 5 inches and has a shaft speed of 150 to 1,600 revolutions per minute. The motor follows standard lines used in separately-cast cylinder engines and has both sets of valves on the left side and operated from a single camshaft. Undue length of the motor, owing to separately-cast cylinders, is guarded against by having the castings slightly flattened at the sides so that the cylinders stand close together.

The aluminum crankcase is cast in two parts, joined at a horizontal center line, both parts being divided into four independent spaces, one for each of the crankshaft throws. This construction permits of the use of five extra long bearings for the shaft, and also facilitates the lubrication of each cylinder bearing, as well as the cylinder walls, the oil for the splash having no opportunity of flooding one cylinder and starving the others. On the bottom half are four supporting arms, two of which are provided with oil reservoirs for supplying oil to all the main cylinder bearings. The top half is divided into four chambers, on top of each of which is an opening in which the cylinder is bolted. On the right side of the top half of the case are four large inspection openings, covered with caps especially arranged for quick removal, so that the inspection of the crank throws may be quickly made.



Intake and Exhaust Side of the Milwaukee Motor

Digitized by Google

THE PRACTICAL RUNABOUT WHEN FINISHED

The crankshaft, made from 30 point carbon steel, is a drop forging, ground to 1¾-inch diameter, and runs in bronze bushings, which are machined on the wearing surfaces. On the rear end of the shaft the 120-pound flywheel is fastened with screws and keys and on the front end of the shaft is fitted the driving gear for the half-speed shaft and the circulating pump. The two end cranks are set in pairs opposed to the center cranks, producing explosions at every half revolution, the order in the different cylinders being second, first, third, fourth. The connecting rod pins are ground and bored hollow to furnish lubrication to the lower connecting rod bearings and to the two end crank bearings.

The valves are located in the bottom of the ports, the inlets in the two front and two rear cylinders being at the adjacent sides of the ports, so that Y-piping can be used in conducting the mixture to each pair. The valve heads are made from grey iron, beveled to 45 degrees, with 2-inch top diameter, which tapers to 1⅝ inches. The steel stems, with hardened ends ⅜ inch in diameter, are driven into the heads, and at the lower ends are slotted for flattened keys, on which rest the aluminum cups for retaining the tension of the valve springs. The camshaft is a ¾-inch ground rod, and carries the commutator on the front end. The cams are made in pairs, the intake and exhaust for each cylinder being machined from one piece of metal, which is pinned to the shaft, the pins in turn being secured by aluminum threaded rings. On the bottoms of the push rods are hardened flat flanges which rest on the cams and have loose vertical stems working in bronze guides. The camshaft revolves on three long bronze bearings and runs throughout its entire length in a bath of oil.

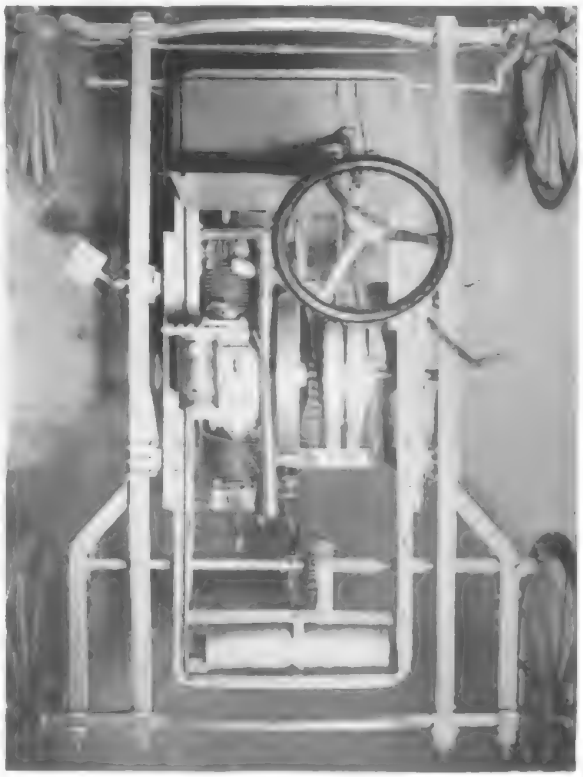
Pistons are 6 inches long and ground .003 smaller than the cylinder bore. They carry three compression rings and wide oil grooves. The former, 5-16-inch wide, are eccentrically ground and pinned against rotation. The wrist pins, 1⅛ inches in diameter, made from hardened tool steel, are hollow bored and held in position by two setscrews and locknuts.

Water circulation is furnished by a bronze gear pump, shown in the end view of the motor on the front end of the crankshaft. It has 1-inch pipe openings and supplies water to the lowest part of the water jackets at the right. The water after passing through the jackets leaves from the top center of each jacket and passes to the top of the radiator.

MADE FOR DOCTORS

The Culver runabout, built by the Practical Automobile Co., of Aurora, Ill., is the outcome of ideas of a physician, De Los Culver, who has had considerable experience with automobiles and which led to the discovery of the motor car's shortcomings from a physician's standpoint. The product of the Practical company can be considered a matter-of-fact runabout, one built wholly for service. It is, comparatively speaking, a small car, and, while large wheels are used, the body is so hung as to be as near the ground as the average automobile. Noteworthy in its design are the large wheels fitted with solid rubber tires, designed to overcome puncturing and still retain much of the resiliency of small pneumatics. In the power plant, consisting of a double opposed air-cooled motor, connected through a planetary transmission and double side chain drive, nothing out of the ordinary is met, plain bearings being used throughout. This construction is to eliminate adjustment while on the road, for the designer had almost wholly in view the needs of a physician in the matter of an automobile, and a physician simply must not break down.

The Culver frame is an angle iron rectangle with two cross pieces to carry the motor and transmission. Each cross piece projects beyond the side angle pieces to form seatings for the long side spring, extending from the front to the rear axle. Each spring is a semi-elliptic of six leaves, with the long bottom leaves clamped at the ends on the top of the solid square axles and in the center clipped to each frame cross piece. Both axles are slightly arched in the center, and carry little truss rods directly beneath, that on the front axle fastened at the ends to the lower part of the steering knuckle jaws and that on the rear fastened to the axle ends. As a support for the long side springs two extra frame pieces, serving as braces, are clipped to the rear axles just inside the wheels, and, extending forward parallel with the frame, support the ends of the differential countershaft and then turn inward and are fastened to the ends of the rear cross piece, serving not only as a side brace for the springs but a support as well. Both axles are of square section 1¼-inch to the side and are made of axle steel. The use of plain bearing for the road wheels is one outcome of the physician's experience, trouble having been experienced with broken balls, when emergency trips were being made, and to overcome jar the rear wheels are made with a 40-inch diameter and the front 38 inches. Solid tires secured by a center



CHASSIS OF THE PRACTICAL RUNABOUT

Digitized by Google

wire are fitted. The wheel base approximates 72 inches and a speed range of from 4 to 25 miles an hour is offered.

The motor has a 3 3-16-inch bore and 4-inch stroke, the rating being 6 horsepower at normal crankshaft speed. It is placed lengthwise at the left side of the frame, thus making room for the gear case to be hung at the right, with the flywheel and drive sprocket separating it from the cylinders, giving typical construction in the disposition of the power and transmitting parts. Each cylinder is surrounded by heavy circular flanges for cooling and in the heads and valve cages are longitudinal flanges. The valves, placed oppositely in the cylinder heads, are, in the case of the inlets, atmospherically operated but for the exhaust the usual push rods and camshaft are used. The valves are 1½ inches in diameter; the inlets have a 3-16-inch lift and the exhausts 1 inch. Mixture is supplied by a Gaveleck floatless carbuereter, placed close to the crank case and a thumb lever on the steering column alters the throttle and another cares for the spark. The spark plugs are placed above the inlet valves. The commutator is fitted on the half-time shaft and is fully protected by a dust and waterproof case.

The planetary gear case gives two forward speeds and one reverse, a side lever giving the direct drive and the reverse and a pedal being brought into use for the slow speed. On a sleeve on the crankshaft is an eight-tooth sprocket, from which a single chain transmits to a twenty-four-tooth sprocket on the countershaft. On this shaft are sixteen-tooth sprockets connected with forty-tooth sprockets on the rear wheel. On slow speed the reduction is two and a half to one, and on the reverse three to one. A speed of 15 miles an hour is claimed for on rural roads. The differential is carried on the countershaft.

For lubrication a pressure feed oiler is attached to the motor at the top of the crankcase. The oil is fed according to the motor speed, stopping when the motor stops and starting when it starts. Six feeds leave the reservoir, one for each of the engine bearings, one for each of the two crank pin bearings and one to each cylinder. On the end bearing of the gear shaft is a grease cup; other grease cups are placed on the countershaft bearings. A Kingston muffler is fitted. A fibre lined band brake is fitted on the countershaft at the differential. The drum is 8 inches in diameter by 2 inches wide.

Steering is through a Brown-Lipe irreversible gear on the bottom of an inclined steering column. To facilitate entering the vehicle the wheel can be tilted. The body work is of piano style, 28 by 68 inches, with a free carrying space of 28 by 28 inches in the rear. The running gear is in Brewster green striped in carmine, with a black body. Black upholstering is used.

A COLUMBUS-MADE MOTOR

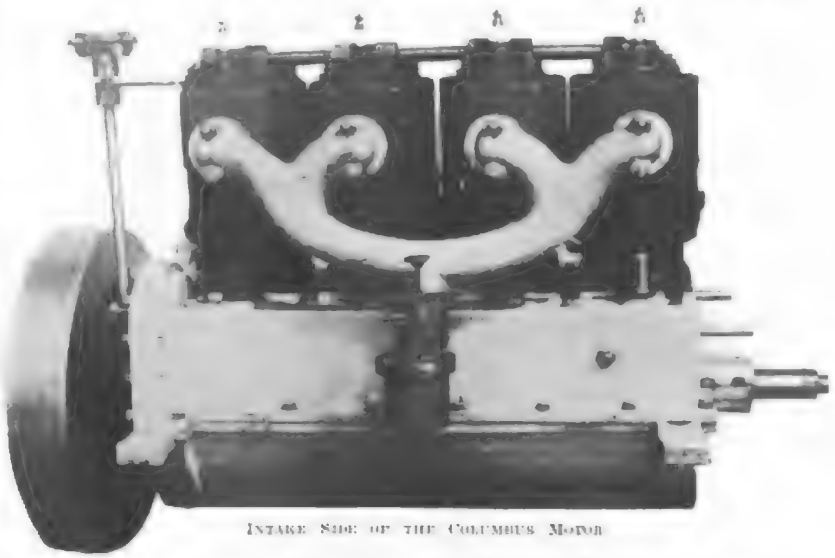
The Columbus Screw & Machine Co., of Columbus, O., manufacturer of marine gasoline motors, has for the automobile trade a four-cylinder motor. The motor follows the familiar lines used in water-cooled motors of the four-cycle class, in which each cylinder is a separate casting with the inlet and exhaust valve ports on opposite sides, with the head as well as the valve ports cast integral with the cylinder. Thirty horsepower is given with a crankshaft speed of 1,200 revolutions per minute. The bore and stroke of the cylinders are 4½ inches.

In manufacturing the aluminum crankcase the bottom part has been designed to rest on the chassis frame, four integral lugs being provided for this. With this mounting, the top part of the motor with all moving parts can be removed, leaving the bottom part in place on the frame and thereby not disturbing the alignment. The top part of the crankcase is box-like, with openings in top for the cylinders and others on the left side for inspection. The rear end of the case is removable and the end bearing is carried in the end plate. The crankshaft, made from 30 point carbon, hammered steel, has five bearings, two long ones on the end and one between each adjacent pair of cylinders. All the bearings are 1⅝ inches in diameter, those on the inside are 2¾, the front one 4 and the back one 5 inches long. The crankpin bearings are 1⅝ by 2⅛ inches. The flywheel is made plain or is adapted for friction clutches. The pistons are made with flat tops, straight sides and are fitted with three compression rings near the top. In addition there is a pair of shallow oil grooves near the bottom, adapted to be filled by the splash when the piston is at the bottom of the stroke. The crankpin is made rigid with the journals, and the connecting rods of drop forgings are eyeholed at the wrist-pin and split horizontally at the lower end. Oil grooves are made in the bearings. The wrist pins are 1 1-16 inch in diameter. Babbitt bearings are used throughout except in the top ends of the connecting rods.

Mechanical valves, 2 inches in diameter and with a lift of ⅜ inch for exhaust and 3-16 for intake, being on opposite sides, two cam shafts are needed. Both are hardened steel shafts driven by enclosed steel gears and splash lubricated.

The inlet pipings on the right side are formed by an integral tubing of scroll-like curves, each branch being secured to the valve port by bolts. By carrying the carbureter close to the crankcase the mixture has a short distance to go and no sharp curves to pass. The spark plugs are placed vertically in the cylinder heads. The commutator is carried on the top of a vertical shaft at the rear end of the motor, a brace from the top of the back cylinder forming a top bearing for the shaft. Bevel gears transfer the drive at the bottom of the shaft. The water cooling arrangements are standard throughout, one set of pipes connecting with the cylinders through the heads and the others through the sides. Circulation pumps, of any design, can be attached.

The length of the motor, owing to separately-cast cylinders, is not more than normal, partly because the cylinders are mounted closely together and also owing to the round on the cylinder castings being slightly reduced at the sides. Accessibility has been kept in view in all the design, inspection caps give ready access to the valves, permitting of quick removal by taking off a couple of nuts and the commutator and water pumps are conveniently placed. Lubrication is by splash from either gravity feeds or positive oilers.



INTAKE SIDE OF THE COLUMBUS MOTOR

MOTOR CAR LITERATURE

The Beaver Mfg. Co., of Milwaukee, Wis., is mailing a four-page folder illustrating on the cover its two-cylinder opposed motor and on the inner pages showing plan and sectional line views of the same, together with a few measurements. The company has similar folders on its four-cylinder motors intended for use in large automobiles.

King automobile tops, made by the King Mfg. Co., Springfield, O., are shown attached to Logan, Thomas, Ford, Union, White, Cadillac, Packard and other machines in a long folder now circulated by the manufacturer. Besides illustrations, the sizes, prices and materials used are given. A few letters of recommendati- are included.

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

THE ENGINE, continued—Like an ill-trimmed lamp, a gasoline motor may produce a most objectionable odor. The products of good combustion are substantially odorless, the amount of lubricating oil used in a good motor is so small that it need hardly be considered, so the presence of objectionable odor should be taken as an indication that something is wrong and search for the trouble should be instituted. The odor of gasoline indicates either a leak or an escape of vapor from the tank or failure to ignite the charge. At ordinary temperature gasoline evaporates very slowly and the amount that escapes from an automobile tank through the ordinary vent is so slight as to be imperceptible even by delicate noses. Much odor therefore would indicate either a leak or that the gasoline was abnormally hot; a condition requiring investigation and remedy. Remove the tank to a cooler place if it gets warm. Of leaks nothing need be said, for surely everyone knows that they are most dangerous and should be fixed at once. Failure to ignite represents a loss in fuel and irregular running and should have attention.

A pungent odor usually indicates carbon monoxide which in turn indicates an excess of fuel; a condition easily remedied by adjustment of the vaporizer. While it is true that forcing a fire by feeding it an excess of fuel, will develop a slightly higher temperature, and therefore more power, this procedure is very wasteful, and such a condition should be corrected. It is therefore advisable to have the vehicle equipped with a larger motor than necessary and run with a poor mixture which, containing an excess of air insures perfect combustion with highest economy of fuel and without odor therefrom. An excess of lubricating oil in the cylinders of lubricating oil of too low fire test will likewise cause odor, the remedy for which is obvious. Usually smoking oil can be known by the blue smoke. Too much gasoline produces a black sooty smoke.

Overheating—This trouble arises from many causes. Steam engineers know that a steam engine must be kept hot to give best results, but many gasoline engine operators assume that the engine must be cold enough to permit holding one's hand against it and many stationary engines are found running this way; a clearly wasteful procedure. Because, however, under such conditions, a certain lubricating oil gives good results, and it is recommended and tried for automobile use and being of too low fire test, it smokes away, gumming up the piston rings, permitting the hot gases to escape by the pistons, causing decrease of power and giving rise to other objectionable symptoms, all termed overheating. If, therefore, this symptom is found after a change of lubricating oil, it is fairly safe to blame the oil. Insufficient lubrication produces similar results. Broken piston rings or scored cylinders permit the gases to escape, carrying the oil with them but leaving the heat in the walls as in insufficient lubrication. Some pumps will not start if there are air bubbles in the circulation pipes and where radiators are depended on, they should be felt frequently to know that the pump and circulating system is on duty. So unreliable are some pump circulations that telltale gauges are used. A dry crank shaft bearing, crank pin bearing, or in fact, any bearing revolving at speed is liable to overheat. Smoking, pounding and loss of power are symptoms and should be investigated.

Some of the anti-freezing solutions do not circulate as readily as water but get much hotter, causing trouble with lubricating oil perfectly satisfactory with water. They are sometimes the cause of premature ignition and other symptoms of overheating. When such solutions are used ample pump and radiator surface must be provided or else the solution must be such that it will circulate thermostatically quite rapidly as does water, or else the piping must be enlarged to equalize the slower circulation. Liquids should not be used that are likely to deposit solid particles either when hot or when cold. Some oils, for example, deposit carbon when boiled, as does molasses, which soon forms a coating on the cylinder walls and prevents proper cooling. Be sure to watch for symptoms of a clogged circulation. A gravity circulation is largely thermostatic and circulates fastest when hottest, but a pump friction or fan belt may slip most when hottest and allow overheating.

Starting Trouble—In a piece of mechanism containing several elements, all of which must be right at the same time to secure proper operation, starting troubles are sure to be found. Here the multiple cylinder motor has advantages over the single, for it is not likely that the mechanical parts of all the cylinders will become deranged at the same time. These parts, however, can be inspected and if the cam shaft turns, the valves open and close, the sparker parts operate and there is a good compression it may be assumed that the motor is ready to go if given fuel and spark. Since the ignition is the most delicate, it should be first inspected, after which the carbureter should be examined. Broken wires, short circuits, bad insulations, stuck vibrators, weak battery cells, insufficient magneto speed and many similar things may interfere with the ignition. Gasoline not turned on, ice water in the fuel, dirt in the float chamber, waste in the air pipe, no gasoline, a broken or detached inlet pipe or an improper mixture being either too rich or too poor, may be among the fuel troubles. A cold mixture requires a larger spark than a hot one, but fortunately any battery is usually stronger after a rest than before.

Cold Weather—On a very cold day ordinary gasoline sometimes will not evaporate, but refuses to ignite, just as if it were kerosene. In such event the cylinder or the supply pipe should be warmed. This will not only warm the gasoline and make it vaporize, but will thaw out any ice that may be holding the float or stopping the supply pipe. A drop of water will lie in most unexpected places and when frozen into ice, causes trouble, which would not have occurred from the water alone. On this account all tanks should be provided with depressions having a cock at the bottom, which will tend to catch the water and permit it to be withdrawn. Frequently an engine is stiff, so that it cannot be turned rapidly enough to properly vaporize the charge. In this event either the cylinders should be heated by pouring hot water on them or holding a torch or lamp under them, or—with great care—squirting a little gasoline over them and ignite. Desperate means are sometimes necessary on desperate days, but when fire is used in this manner it must be kept under control. **Do not squirt on a lot of fuel before igniting.** This means a big fire impossible to control. Apply first a few drops and set fire to it, then apply more as occasion demands. You cannot explode an ordinary squirt can containing gasoline, and can direct and control the flame as wanted in this manner. Many users inject kerosene to cut the grease before leaving the motor after stopping. This is good practice, but too troublesome for the average man. Gasoline injected before starting on a cold morning will serve the same purpose. Care must be taken not to get too rich a mixture by this procedure and if it fails to ignite, turn a few times with the fuel supply shut off.

Formula for Starting—Starting troubles are sometimes the fault of the operator who neglects to do some important and necessary thing. Probably every user can remember a time when he failed to close the switch, open the throttle, turn on the gasoline or do some little thing of this kind simple but necessary. It is extremely aggravating to waste time and muscle for a needless reason like this and the only way to prevent it is to follow a formula each time, which includes all the necessary starting operations. Some of these may not be necessary for that particular start because, for example, the gasoline may already be turned on, but if each of the necessary points is made sure, the motor will usually start. Here simplicity again asserts itself. A simple motor needs but a simple formula.

EDITOR'S NOTE—This is the fifteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

PIONEER AMERICAN MAKERS
RANSOM E. OLDS

EIGHTEEN years' experience as a builder of automobiles surely ought to qualify a man to write "veteran" after his name. Admitting the truth of this logic, R. E. Olds, president of the Reo Motor Car Co., of Lansing, Mich., is entitled to considerable credit for the part he has taken in building up the industry. It was in 1887 that he built his first automobile and since that time he has been prominently identified with the trade as a designer as well as a manufacturer. That first car, constructed a decade and a third ago, was of peculiar construction compared to the modern machine. It was a three-wheeler, the box or body being very deep so that the rear axle passed through the sides of the body in order that the machinery might be entirely concealed inside. For propelling power Mr. Olds used a 3 by 8 cylinder steam engine, with a horizontal porcupine boiler, with gasoline for fuel. After testing this for some time, Mr. Olds changed to a flash boiler. With this machine he experimented on the streets of Lansing, but it did not come up to Mr. Olds' idea of what was right, so it was taken back into the shop and more gray matter was used in improving it. It was thoroughly remodeled and when it once more made its appearance on the streets it looked like a new machine. It had been converted into a two-cylinder affair and four wheels were used instead of three Olds started out with.

While it ran much smoother than the original car, Mr. Olds was still far from being satisfied with it. The inventor became convinced that he was not getting the best results with steam power for the reason, he thought, that if put on the market, with its delicate parts, it would prove too complicated for the average user. All this while he had been experimenting with a little gasoline engine and boiler. It had been well tested and met with a ready sale. This led Mr. Olds to go to work on an explosive engine, which he finally evolved into something useful as a commercial proposition. It apparently gave universal satisfaction, so the inventor made up his mind that it was the only power for the automobile. He then proceeded to put this idea into execution, with the result that in 1893 he started to build an automobile with the gasoline explosive engine. But at this time he was far from reaching perfection. There was plenty of experimenting to do and Mr. Olds was determined to be right before offering his product for general sale. About this time the Chicago Times-Herald came out with its offer of $5,000 to the winner of the first automobile race scheduled in America. Every inventor at all automobilically inclined set his wits to working to produce a machine that would not only pull down that $5,000 pot, but would also demonstrate to the American public that the automobile was practical. Mr. Olds was one of these, but when the time for the race arrived he had not completed the machine, so did not take part in this initial contest run through the snow and won by Duryea.

"In 1897 and the year following I organized the Olds Motor Vehicle Co. with a capital of $50,000," says Mr. Olds in recounting his career in the last 8 years. "This company, however, did not secure any location, so that later on the Olds Motor Works was organized, with sufficient capital to take over both the Olds Gasoline Engine Works and the vehicle company, as I much preferred to operate under one head if I was to manage both companies. After this move, I was elected president and general manager of the Olds Motor Works and we then purchased the Olds Motor Works site on Jefferson avenue, Detroit, where I erected a plant and equipped it for the manufacture of motor vehicles. My first thought was to build a high-priced machine, but after spending a great deal of money and time in experimenting along this line, I could see nothing but discouragement, as was the case with other manufacturers at that time. The electric vehicle had made its appearance and was not considered a satisfactory vehicle; at any rate, the failures were on every hand. Then the steam machine came in and had 2 years of successful business. I could readily see that if there was not some moderate-priced machine to take the place of the $700 steam machine that the automobile industry would soon be a thing of the past.

"Working along these lines, I abandoned my ideas on the high-priced mechines and turned all my energies toward a light practical machine at a popular price. When it was learned that I proposed to put out a machine for $650 I was visited by several manufacturers who claimed that I would do a great injustice to the industry by coming out with a $650 machine, when there was nothing on the market short of $1,000 or $1,500. I felt, however, that it would do the industry a great deal of good. I could see there were thousands of people that could raise $650, but would not consider the higher-priced machines. My first thought was that it would be possible to produce a machine that would not weigh over 500 pounds, but when it was completed it weighed over 700 pounds, which was, later, made to weigh more by the adding of additional parts and attachments that I put on.

"In the fall of 1901, when I took one of these runabouts to New York and secured a small space in the Madison Square garden, I sold in 4 days over 1,500 machines. When it became noised around the garden that I would not take anything less than car-load orders, it seemed very queer to automobile people. I was, however, successful in convincing the agent. Any one familiar with the conditions of the automobile business at that time could not help but believe that it did wonders toward stimulating the automobile industry. During all my experience in the manufacture of gasoline motors, my record for over 23 years, while I was handling the Olds companies, shows that there was never a year during that period but that we did an increasing business. When it was known that I had retired from the old company, I was visited by a committee from New York capitalists that offered to put in a million dollar company, all paid in, and turn over to me a half interest, or controlling interest, if I would accept of the presidency and management. At that time, my thought was that I did not care to again take up the care of a large manufacturing industry. Later, however, through the influence of friends I was induced to again enter into the business. So far it has been wonderfully successful and I have reason to believe the industry is in its infancy."

THE REALM OF THE COMMERCIAL CAR

A. H. Tunker in His Inspection Car

THE municipal automobile is no Utopian conception; it is a dollars and cents investment in which the purchasers, generally public employes, have been led in their actions in buying the motor wagon in preference to horse-drawn vehicles because the former offers a cheaper, quicker, equally as reliable and more comfortable means of transportation.

Two years ago—in fact, 1 year ago—the mayors and city fathers of many of the biggest American cities were racking their brains in drafting arbitrary legislation, restricting as far as possible, the safe and legitimate uses of the motor car. Today many of these same officials use the little runabout or the heavier touring car in their daily tours of inspection and work in and around the city. Water commissioners who, 12 months ago, jogged lazily along, contented with Dobbin's 5-mile-an-hour jaunt, are going their daily rounds in the gasoline or electric runabouts and are much better pleased with an 8 to 20 mile ride on a pneumatic tired chug wagon than they previously were on the clattering steel tired buggy.

Park commissioners, in a metropolis like Chicago, find the motor car indispensable. Their duties require them to make daily inspections of all parks and boulevards coming under their jurisdiction, which duties, owing to the annual opening of new parks and the increase in the mileage of the boulevards, become impossible with the sphere of usefulness of the horse. Many park officials found their daily routine carrying them over a radius of 100 miles, a distance which could not be covered with three or four relays of horses in the average day. To such officials the automobile is daily proving a salvation; it carries them from place to place, at speeds equaling the limits prescribed by the city ordinances, which limits are, however, frequently exceeded, in order that the day's inspection may be completed within period of 8 or 10 hours. Superintendent Foster, of the Chicago South Park Board, which has fourteen parks under its control, covers 80 miles per day in his machine, while the assistant superintendent averages 102 to 105 miles per day in his round of parks and boulevards. On the same board Captain Kelly, of the police department, has 105 miles to his credit every day, and a few of the other park officials have an equally great daily mileage. All of these officials once used the horse, but the extra duties placed upon them by park additions made the motor car a necessity.

The fire departments, those departments under municipal control that rely essentially upon reliability and speed, are gradually adopting the motor car for the use of the fire chief and his assistants who are expected to be at the scene of the conflagration at the earliest possible moment. Chief Larkin, of Dayton, Ohio, is one of the recent converts and Chief Sullivan, of the San Francisco fire department, is another enthusiastic supporter of this use of the motor car. In New York, one or two fire chiefs have used the motor car several years and in other cities the heads of this department are experimenting with and testing the reliability of the machine. Fire chiefs who have used the automobile are unanimous in its praise, declaring that as far as reliability is concerned it is on a par with the horse and judged from the standpoint of speed and safety, while traveling on the thoroughfares, it far exceeds the equine. In Germany, England and France the use of the motorcar is not limited to the service of the fire chief, but hose wagons, chemical extinguishers, ladder wagons and fire engines propelled by gasoline motors are now in use in several of the leading cities. Berlin has used gasoline and electric fire engines in one of its districts for over a year, during which time daily calls have been responded to and not on a single occasion have the engines failed in their work of fire fighting.

This particular field is specially suited for motor propelled vehicles, as the calls are few and far between, during which period of waiting the motor wagon has no maintenance expense, whereas the horse-drawn wagons and engines require relays of horses that are eating their heads off between calls. Three or four English firms, among which can be noted the Wolseley concern, include the manufacture of fire-fighting machines in their regular output and manufacture chemical extinguishers, hose wagons and fire engines and recently have added to this list fire escapes and water towers for high service.

Hospitals, which, strictly speaking, are not under municipal control, are proving, however, a fruitful field in which the automobile manufacturers are finding ready sales. A few examples, taken from American cities, will serve to show the tendency in this regard. The Lakeside Hospital in Cleveland has used since January, 1903, an electric ambulance for transporting patients between the hospital, the city depots and their homes. Dr. Ranny, the hospital superintendent, states that after 2 years of continual use, he would, under no circumstances, revert to the horse-drawn type. The ambulance used carries 44 cells of battery and fitted with solid rubber tires can easily make 12 and 15 miles per hour. The superintendent, however, has one criticism—the solid tires do not sufficiently reduce the vibration when traveling at 10 miles per hour over rough streets, and he recommends strongly the use of pneumatics. The Boston City Hospital has recently installed an electric ambulance fitted with pneumatic tires, which averages 16 miles per hour, and has a running radius of 30 miles. This ambulance is constructed along modern lines and is a great step in advance of the horse-drawn class. Private parties are even taking to the automobile ambulance. John McCarthy & Sons, of Syracuse, N. Y., lead in this line, having used one for some time, and now one of his Syracuse competitors has joined the ranks and installed a gasoline one for public and private service. These few examples indicate the suitability of the motor car for such work.

Other fields, for the municipal operation

of the automobile, are the use of water commissioners and their staffs who are required to make an almost daily round of the city reading meters, superintending the construction of water mains and attending to the turning on and off of the supply; street inspectors, whose duties require them to traverse all parts of the city, where street improvements are being carried on or where inspections are to be made; heads of electric lighting departments, who have their daily city excursions and in addition can be noted the almost numberless city officials, such as mayor, aldermen, sanitary boards, surveyors and others whose duties compel them to be in many different parts of the city on the same day. To all of these officials the motor car is well adapted; when in use it goes quickly on its mission and when idle it neither requires attention nor fuel.

The city of Springfield, Mass., the home of the air-cooled Knox automobiles, while small in comparison with the population of many other eastern cities, leads in the use made of automobiles by city officials and other men in public positions in the city. This may be owing to the fact of Knox cars being made in the city, but yet in other places where automobiles are manufactured the city officials are not so quick to use the motor car as has been the case in Springfield. Among the officials using cars, all of them being Knox made machines, can be noted City Marshal George M. Stobbins, with his motor patrol and ambulance; E. E. Stone, chairman of the water commissioners; A. A. Adams, superintendent of streets; Charles E. Ladd, superintendent of parks, and to this list can be added A. H. Yunker, superintendent of construction of the United Electric Light Co., whose interests in this work are closely associated with city enterprises, and J. E. Converse, superintendent of electric lights.

All of these officials have used the motor car for periods varying from 3 months to as many years and the verdict of all is the same, "The automobile is much better and cheaper than the horse for our work." One and all of them have had the experiences common to pneumatic tires, flooded carbureters, broken spark plugs and burnt-out coils, yet in spite of these few looked-for occurrences, the motor car has sufficient merits to offset any little irregularities of running that come.

George M. Stebbins, city marshal of the city of Springfield, Mass., has used an automobile patrol and ambulance for the last 9 months, during which time the vehicle has covered 4,419 miles at a total cost of $256.58, being an operating expense of 5.81 cents per mile traveled. Marshal Stebbins, in speaking of the success of the automobile patrol and ambulance to a MOTOR AGE representative recently, said:

"That automobiles have come to stay is nowhere better demonstrated than in their application to the commercial life of the street and the speed with which large vans of merchandise are transported from place to place. This has led to the introduction of the automobile police patrol. In the year 1904 the police commission of this city placed an order for such a vehicle with the Knox Automobile Co. for the city of Springfield. This was completed and placed in active service about February 1, 1905. The automobile police patrol is propelled by a two-cylinder Knox engine estimated at 16 horsepower and a carrying capacity of fourteen persons. It is fitted so that it can be used as a police patrol or an ambulance, and has been used in the latter capacity in all emergency cases since its introduction. During the time it has been used in this department, covering a period of about 9 months, it has covered a mileage of 4,419 miles, at an expense, including repair, of $256.58; doing the work of two horses.

"Comparing the cost of keeping and shoeing horses, and repairs on harness and wagons, as a matter of economy of maintenance the comparison is in favor of the automobile. This, however, is not the essential consideration. The quickness and dispatch with which the work is conducted, even though the expense was greater, is an essential element to be considered. Several instances have occurred where from a humane standpoint the automobile has more than satisfied the promoters of the idea of using an automobile for police and ambulance work. One instance I note, which occurred a few months ago. A large touring car collided with a farmer's wagon in the suburbs of the city, some 3 miles distant from the police station, dangerously injuring one of the occupants. A telephone summoned the automobile police patrol. Upon its arrival the injured man was placed on a stretcher in the patrol, taken to the hospital about 4 miles from the place of the accident, and after leaving the patient at the hospital the patrol returned to the station. The time occupied from the receipt of the telephone call until the patrol had returned was 35 minutes. The whole distance covered was 8 miles. This is only an illustration of the daily work of the automobile police patrol in this city. The reliability of the machine for service is excellent. It has never failed us as yet, except for some momentary adjustment, and that but a very few times. With the record of the machine for the past 9 months, its readiness for service, the quickness and dispatch of the same, and its economy compared with the use of the horse patrol and ambulance, the promoters of the introduction of the automobile police patrol and ambulance are more than satisfied with its success."

The Springfield Electric Light Co. has purchased two runabout machines for the use of superintendents of lights, at night, and construction work by day. Both of these runabouts are specially fitted for the work, having light carrying spaces for repair parts or small tools. One of them has come under the supervision of Mr. A. H. Yunker, superintendent of construction, who, in a recent conversation expressed himself in the following terms on the adaptability of automobiles for such trying service:

"We have used two single-cylinder Knox cars for the last 10 months, making a mileage of 27,600 for both machines. These cars were originally designed to

CHARLES E. LADD, SUPERINTENDENT OF PARKS OF SPRINGFIELD, MASS., WHO USES A KNOX FOR BUSINESS PURPOSES

Digitized by Google

MARSHAL STEBBINS AND THE SPRINGFIELD POLICE PATROL WAGON

carry some little weight and have room in the body for a small load. We have used them as runabouts, however, patroling street lights during the nights and following our construction work by day, so our economy has perhaps not been as good as it would had we a light runabout. We use approximately 1 gallon of fuel for 9 miles of running and the average cost per mile has been $.058, including all repairs and renewals, but not driver, depreciation or interest. We have had very little tire trouble, the principal fault being sand blisters caused by sand working through cuts in the tread and packing in between the same and the shoe causing the tread to break. These cars average 90 miles per day and it is almost impossible to compare them with a horse. We would say, as a low estimate, that these machines have replaced six horses and would add that we used them all last winter with the exception of 1 week of soft snow."

"The runabout purchased in May, 1904, of the Knox Automobile Co., of this city, by the city of Springfield for my use," said A. A. Adams, superintendent of streets, "has given excellent satisfaction. In all, I have probably driven it more than 10,000 miles and it works today fully as good as when first used. I would say that I had considerable trouble with tires last year, but have had no such trouble this year. It has required 1 gallon of gasoline to run 11½ miles and the machine does more work than could be done with two horses."

"We have used in the water department," said E. E. Stone, chairman of the Springfield water department, "for the past 2 years, a single-cylinder model E Knox runabout. This has been in continual service, and largely on rough country roads, on work at such a distance from the city that it would have been impracticable to use horses, and it has given us good satisfaction during all that time."

A NEW YORK DELIVERY

R. H. Macy & Co., dry goods merchants of New York city, use fifteen electric delivery wagons in the delivery of their goods throughout the city. In speaking to a member of the concern recently a Motor Age representative received information on the running of the machines. The fifteen wagons average 26 miles each per day, some, however, do 35 miles regularly every day, while others, owing to the nature of the work, drop a little below the average. Two and often three deliveries are made over the same district every day, the weight of the loads on the different trips and over the different routes varying all the time. Three thousand pounds have been carried on the wagons on many occasions. The power consumption for each vehicle amounts to .75 kilowatts per mile. As with all other delivery wagons the tire question must not be forgotten. Some of the tires endure all the way from 1 year to 18 months, the rear tires generally running 12 months and the front serving for 1½ years. In comparing the delivery wagon with the horse-drawn wagons it has been found that each electric performs the work of one-and-one-half horse wagons, meaning 50 per cent increase in work over the horse. Macy & Co. have found the electric vehicle serviceable to a certain extent in their business, the extent depending entirely on the efficiency of the battery, which they claim varies greatly with the temperature.

GERNSBACH VAN THE STAR

Honors in the van and omnibus trials of the Automobile Club of Germany, held over a course extending from Berlin to Spandau, from October 9 to 14, inclusive, were carried off by the omnibus entered by Gernsbach, of Baden, which finished first on each day's journey. The official winner, however, has not yet been declared, the German officials having taken the matter under advisement. The Gernsbach machine, or the single-deck Safe, as it is better known, is an omnibus carrying thirteen people, the wheels being fitted with solid tires in the rear and pneumatics in front. It was put in commission only on

A. A. ADAMS, SUPERINTENDENT OF STREETS, SPRINGFIELD, IN A KNOX CAR

by Google

DAIMLER THIRTY-PASSENGER BUS

BUSSING TWENTY-SEVEN PASSENGER BUS

October 6. Twelve out of the thirteen cars that started finished, the laggard being the old beer van entered by the Daimler people, which has been knocked about over the rough cobblestones of Berlin's streets since 1898.

The competition was divided into classes for the heavier and another for the lighter machines. The ponderous vehicles being regarded as light-winded, were given only about 290 miles to make in the 6 days, while the others were required to do something like 421 miles in the same time. At the last minute the committee made its first trip over the route for inspection purposes and then made several slight alterations, which, however, did not work any very great hardships on the contesting machines in the several classes.

Two of the original field were scratched, but reenforcements were received in the shape of a Daimler two-cylinder, 10-horsepower alcohol-driven milk van and a 10-12-horsepower two-cylinder spirit engine N. A. G. van, shod with pneumatics. H. Rosenthal's van was one of the absentees, while the other was a steam van nominated by Garrett, Smith & Co., of Magdeburg. This last concern scratched for the very good reason that the day the trials started they filed a declaration of insolvency for the sum of $1,000,000. In class I the Daimler people withdrew their bus seating twenty-three people and substituted one with 18 horsepower instead of 25 and carrying thirty-two people, while the Daimler originally in class IV was reduced in weight and put in class III.

Early on the morning of the 9th the field was sent away, an official observer being in each car. His duty was to report each day on the vehicle's working, reliability, smoothness or otherwise of traveling, degree of annoyance through noise or smell, consumption of combustibles, repairs necessary and time taken for them, etc., etc. The observer was also held responsible for any violations of police regulations en route.

Hardly had the caravan gotten away on the first day's journey before it started to rain, but this did not prevent eleven of the rigs completing the journey of 60 miles to Gransee. The first in was the Gernsbach omnibus, which did its stunt in less than 4 hours 30 minutes. By 3 p. m. the other ten had registered. The beer van got into trouble through a defective steering gear and stuck, while the Daimler van for 6,600 pounds smashed into a tree and broke an axle. The beer van, however, was ready to start in the next morning on the Gransee-Neu-Brandeburg stretch, a distance of 76 miles. Here again the Gernsbach put it over its rivals, reporting within 5 hours after the start, having averaged 15 miles an hour.

Fine weather favored the contestants on the third day and the Gernsbach proved that it could travel on dry land as well as it could through the mud by reaching Gnoyen first. This day's journey was 65 miles for the light-weights and the Baden rig negotiated the distance in 3 hours 37 minutes or 17½ miles an hour. The Daimler which broke its axle the first day had patched up so as to be able to keep in the running and it surprised the others by finishing a good second to the apparently invincible Gernsbach. It was a tough pull on the fourth day between Gnoyen and Goldberg, especially for those on the long course. The recent rains and the miserable work of the road-mender extended each rig to the utmost. It was 2:30 in the afternoon before three of the machines straggled in. Of course the Gernsbach was Johnny-on-the-spot, but this time it had company in the shape of the 3-ton Daimler and the N. A. G. delivery van.

Again on the fifth day were the contestants forced to fight the allied forces of the weather man and the road-mender. Old Boreas, too, joined in the war and this combination slowed down the entire field, so that 8 miles an hour was considered going some. At 3 o'clock that afternoon the Gernsbach turned up at Kyritz, having covered 68 miles in 5 hours 31 minutes. The others straggled in one by one, until at 7 o'clock all were safely housed, the observers' reports filed and everyone working to get ready for the last day's run to Spandau.

Keeping up to the reputation it established all the way through the contest, the Gernsbach crossed the finish line at 1:37 on the sixth day, with the others strung out miles behind it. But the stragglers came hiking along by and by, so that all were checked in with the exception of the old beer van, which foundered somewhere along the road and could not be set going again to get to the tape before the officials left and the race was over.

While nothing official has been announced, it would seem that the Gernsbach had won by a city block. Of course, it all depends on the reports filed by its observer as to whether or not its consumption of benzine was in favorable proportion to its speed.

Following on the heels of these van trials came the Frankfort motor exhibition, which opened on the 20th and lasted to the 29th. H. R. H. Princess Friedrich Karl of Hesse was the patroness and all the leading motor people of Germany exhibited their wares, prominent among which was the commercial end of the game.

GERNSBACH BUS, LEADER IN THE GERMAN VAN AND OMNIBUS TRIALS

Digitized by Google

From the Four Winds

START OF THE RECENT BALLOON RACE OF THE AERO CLUB OF PARIS

A. C. A.'s Membership Full—The Automobile Club of America has reached its membership, having now on its roll 700 active and 200 associate members. There is a waiting list of forty.

No Kickers Here—The Franklin people made a hit with New York users of their car by sending half a dozen experts to Gotham to call on each patron and if anything was wrong with his car put it to rights free of charge and with the compliments of the company.

Spends His Velvet—J. Wicks, who owns the property on which the grand stands were erected for the Vanderbilt cup race finish, cleared up so much money out of his many concessions at the trial and final that he has just got rid of a portion of the surplus by buying his first automobile, a 30-horsepower Pope-Toledo.

Test of Motor Guns—It is proposed to thoroughly test the automobile corps of the French army in the field maneuvers by having it attack the Lebaudy dirigible balloons. The motor cars will be equipped with light rapid-fire guns and searchlights and will follow the balloon, similarly equipped, and endeavor to put the air ship out of business.

June Time for Roadwork—Sidney J. King, pathfinder for the American Good Roads Association, after tracing a route in a Reo from Grand Rapids to Detroit, declares it to be his conviction that fall is not the proper time for the farmers to work out their road taxes. He believes that if the work was done in June the surface would have time to pack and work in so as to be impervious to the autumn rains and the spring thaws.

English Hold Secret Quiz—The motor car commission appointed by the English government to investigate the operation and working of the motor car act of 1903, with a view to its amendment and renewal, had its first meeting on Monday last. Its first proceeding was to decide that the press and public would be excluded from its deliberations, a fact which has taken a lot of the public interest out of the business. The commission is presided over by Viscount Selby and representatives from the local government boards of Scotland and Ireland. The chairman of the automobile club, the secretary of the Motor Union, the permanent official in charge of the working of the act at the local government board and others were examined, but what they said and what they did history sayeth not.

Queen Finishes Tour—Dowager Queen Margherita of Italy has just returned to Turin after a journey of 5,000 miles in her automobile through Switzerland, Germany, Holland and France.

King Is Generous—The king of Italy has hung up $7,000 in prizes to be distributed among the exhibitors at Milan's international exhibition next year. Among the prizes is one for $1,000 to be awarded to the best motor boat.

Jolly City Fathers—To show their appreciation of the paved streets movement in Muskegon, Mich., the automobile owners of that city recently gave the aldermen an automobile ride which ended with a banquet. The affair was in charge of Dr. C. J. Dove, president of the Muskegon Automobile Club.

Cripple Expert Driver—J. T. Landis, a reputed millionaire of Nashville, Tenn., who is deprived of the use of his legs, recently drove from his home to Springfield, Mass. He drove the car himself and averaged 175 miles a day. The brakes on the car are so arranged that Mr. Landis can operate them with his hands instead of his feet. On his tour he had his invalid's chair sent ahead of him each day for use when not in his automobile.

Phillies Wake Up—The Philadelphia Dealers' Association, after the summer's busy days, has come to life with a rush, and besides its effort to secure the use of the speedway has scheduled a hill climb, probably on Thanksgiving day, and a local show by its members, without the assistance of professional promoters. Runs and endurance and economy tests are being considered as means of keeping the interest alive in Philadelphia between seasons.

Beats Fish Story—Jackson county farmer found an automobile horn on the roadway recently and took it home and taught his chickens to recognize its honk as their feed call. Instead of calling the chickens in the usual way, the farmer or his wife would blow the horn. One day an automobilist in a car was driving by at the rate of about 15 miles an hour, all the time tooting his horn. The farmer's chickens took after the automobile and fourteen hens and three roosters ran themselves to death. And this story is in line with the one from Jersey, whereby an automobilist, honking his horn, attracted a flock of Canadian geese, and ran over and killed two of them.

Seeks New Home—The Automobile Club of Washington has taken quarters in the Colonial hotel on H street, the temporary quarters in the Villa Flora clubhouse having proved unsatisfactory. A suite of rooms on the second floor has been engaged and the club expects to take possession within a week.

Start of Balloon Race—Doubtless the members of the Aero Club, of America, of which organization many prominent motorists are a part, will take an interest in the photograph of the start of the recent balloon race of the grand prix de l'Aero Club of France. Seventeen of the air monsters took part in the competition, seven countries being represented.

On Long Ramble—G. M. Huston and his wife and son of Chicago, were reported at Charleston, S. C., last week on a rambling tour through the south. They have been on the road since last April and the odometer showed 17,321 miles at Charleston. Their trip has taken them through the east, where they spent the summer at Atlantic City. It is their intention to continue their trip until Mr. Huston's winter home in the southern part of South Carolina is reached.

Bald Aids Cupid—Eddie Bald assisted a newly married couple out of a rice-throwing onslaught when he secretly whirled Mayor and Mrs. Cavanaugh, of Norwalk, Conn., over the road to New Haven from Hartford in the car in which he broke the 5-mile record. The wedding was the largest one of the fall season in Hartford. The couple went into a carriage only to pass out the other door and into Bald's car. Though 42 miles separates Hartford and New Haven, Bald landed Norwalk's mayor and his new bride on the college green in 1 hour 7 minutes.

Red Cross No Protection—Mayor Dunne, of Chicago has ruled that the red cross does not make immune from arrest physicians who violate the speed ordinances. The horse-drawn vehicles he declares to be in a different class, because at their top speed they are not dangerous, while motor cars, if allowed unlimited freedom, would endanger the lives of pedestrians. The mayor holds that even if a doctor is hurrying to a sick man's bedside record-breaking speed is not permissible and that the patient will have to take his chances in order that others may not be placed in jeopardy.

Wolverines Are Shy—Either the number of automobiles in Michigan was greatly overestimated or a large number of car owners have failed to comply with the state law requiring the licensing of automobiles, as only 2,700 licenses have been taken out at the office of the secretary of state. It was estimated during the session of the legislature that at least 5,000 machines were owned in Michigan. The license fee of $2 on each machine goes toward the support of the department of good roads. The enforcement of the law requiring the license fee lies with the state authorities and if police departments do not require the payment of the fee it remains unpaid.

Long Run—One of the longest trips a-motor to the Vanderbilt cup race was that of John A. Landis, of Nashville, Tenn., who made a journey of 1,430 miles in his White steamer by way of Cleveland and Buffalo.

Garage for Gas Man—Thomas Dolan, president of the United Gas Improvement Co., is now having a private garage built at his country place at Torresdale, a suburb of Philadelphia. The structure will be 33 by 28 feet in dimensions, and Stacy Reeves & Sons are the architects.

Makes Them Cough Up—Automobiles have been used in the campaign at Syracuse this year for the purpose of seeing politicians who are supposed to have money and making them loosen up. The machines have been scooting to every part of the city and it is impossible for a prospective contributor to escape.

Automobile Studio—R. L. Sleeth, Jr., an enterprising photographer of Wilkinsburg, Pa., the largest suburb of Pittsburg, has taken a unique way of getting business. He takes orders by phone, carries a complete photographic outfit for almost all kinds of work with him in his automobile and does all the work except the finishing touches away from his office.

Champion Car Owner—Claim is made that Colonel John Jacob Astor is the champion automobile owner, maintaining a stable of twenty cars reputed to be valued at $100,000. It is said it costs him about $15,000 a year to maintain this string, not counting salaries of chauffeurs, storage and fuel. Jefferson Seligman has had fifteen cars, while C. K. G. Billings, gas magnate, has twelve gasoline cars and one electric.

Clash with Horsemen—There's going to be a regular talkfest in Quakerville soon, and any one interested enough to do so can, by putting his ear to the ground, hear the rumble of approaching trouble. It is all owing to the members of the Philadelphia Automobile Dealers' Association having decided at its last meeting to petition the Fairmount park commissioners to grant them the use of the new speedway for a day or two each week. As the speedway is practically abandoned by the horsemen for 5 days of the week, it will be a triumph for the latter's dog-in-the-manger policy if the automobile owners are not permitted to burn up the new road for several hours at least one day in the week.

Quakers Celebrate—One of the most interesting features of Philadelphia's night parade to celebrate the winning of the American league baseball pennant by the champion Athletics was the large number of automobiles in line. As soon as the Quakers won the deciding game from Washington—the parade feature had been decided upon earlier—Manager W. F. Smith, of the local Rambler agency, made a ten-strike by offering the champions and the officials the use of ten machines. The offer was promptly accepted, and the next day the Winton, Reo, Acme, Ford, Maxwell, Packard, Yale and other representatives made similar offers to the committee in charge of the affair. Each of the six divisions of the parade—and it was a huge affair—was in charge of one of the local newspapers, and in each fully a score of automobiles were lined up, all handsomely decorated and illuminated. The Evening Telegraph took advantage of the occasion to put on the street for the first time the first of its electric delivery wagons. At present the Telegraph has no fewer than sixty-five horse-drawn wagons employed in this work, and it is believed that with a battery of twenty-five motor vehicles the same work can be done in a shorter time.

Fast Test—Ted Finch, of the Pungs-Finch Automobile Co., of Detroit, tested out a model F car by driving from his home city to New York to see the running of the Vanderbilt cup race, making the 880 miles, he claims, in 48 hours, his route taking him through Toledo, Cleveland, Buffalo, Geneva, Seneca Falls, Syracuse, Albany, Poughkeepsie and the east bank of the Hudson river to New York.

Chinese Student—Chan Hoey, a Chinaman, is in the Olds factory learning the game in order that he may return to his native land a full-fledged automobile expert. He is also way up in electricity, having been connected with several big concerns in that line. He has been in the country 8 years and expects to go home in 2 months and start a general electrical and repair business in Canton.

Twelve Cars in Athens—In view of the rapid growth in the demand for first-class automobiles and the remarkable success achieved in their construction in this country, the following data about automobiles in Greece will give American manufacturers an idea of the demand in that part of the world. At the present time there are twelve automobiles in the city of Athens. Three of these belong to the king and the princes. His majesty's car is quite a luxurious affair, and cost about $4,000. That owned by Prince Andreas was presented to him by the czar of Russia. Most of the automobiles in use in Athens were purchased in France at a cost of from $772 to $1,930. Three new ones are now on their way to Greece. Automobiles are classed by the tariff law as four-wheeled carriages, which, upholstered or not, used or unused, pay a duty of $57.90 each, besides octrio, etc. In the case of a high-priced carriage, with sumptuous furnishings, duty is assessed on value declared in invoice and bill of lading, and importers are advised to obtain an invoice from the Greek consul in the country from which shipment is made. In this latter case the duties are 20 per cent of assessed value, $25 octroi, and 5 per cent on the 20 per cent.

Spreckles an Enthusiast—John D. Spreckles, the sugar king, is one of the most enthusiastic motorists on the Pacific coast. On one of his recent trips from San Francisco he had in his White steamer Miss Grace Spreckles and Mr. and Mrs. Wakefield Baker.

Active Consulate—It is reported that the Pittsburg consulate of the American Motor League has been doing good work in the smoky city in the way of working for highway improvement and getting after the miscreants who threw broken glass in the streets.

Bus for Servants—Mrs. George L. Carnegie has lately received at her winter home in the south a 1-ton Waverly electric truck arranged so that seats can be placed along the sides, turning it into a bus. It will be used for transporting her servants and supplies from the station to her winter home at Plum Orchard, Fernandina, Fla.

Ohio Roadmen Organize—At the good roads convention held at Toledo, O., last week a very excellent program was given. A permanent organization was formed with A. L. Spitzer as president, C. W. Shoemaker first vice-president, J. L. Pray second vice-president, J. W. Flowers secretary and R. A. Bartley treasurer. Vice-presidents were also selected for each one of the sixteen townships in the county. The organization will hold another meeting on November 11.

French Dissatisfied—It is reported from the continent that owing to the small amount of interest taken in the fall meetings held around Paris that it is likely that there will be a general reorganization of the program in the future. Chateau Thierry, Dourdan and Gaillon were promoted for the purpose of enabling makers to test their cars before exhibiting them in the Paris show. But all makers are not testing their new machines in this manner and the others object to meeting old cars in such competitions.

JOHN D. SPRECKLES, THE SUGAR KING, AN ARDENT AUTOMOBILIST

Digitized by Google

AMONG MAKERS AND DEALERS

Takes on the Corbin—J. S. Bretz, while in Chicago, placed the agency for the Corbin car with the Bennett-Bird Co.

Dyke Resumes—The Phoenix Automobile Supply Co. has bought the stock of the Auto Exchange & Supply Co., of St. Louis, and will continue the business at 3939 Olive street. A. L. Dyke is the manager of the concern.

Howell Well Fixed—R. G. Howell, recently of the Harrolds Motor Car Co., of New York, has just been installed at the head of the Franklin department of the Decauville Automobile Co. He will have under him three assistants in addition to a Brooklyn representative.

Change of Name—George E. Hawley, formerly secretary of the Automobile Equipment Co., has purchased an active interest in the Gray Mfg. Co. of Detroit, and the name of the concern has been changed to the Gray-Hawley Mfg. Co. It will make mufflers, autochimes and marine whistles. A change in location has been found necessary and the plant is now at 605-9 Fort street.

Quaker Change—The property at the northeast corner of Broad and Race streets, Philadelphia, has been leased by Foss & Hughes, who recently acquired the agency for the Pierce and Cadillac machines for the Quaker City and vicinity. A large force of carpenters, painters and decorators is now at work beautifying the place, which is admirably adapted for the purpose, having good-sized fronts on both streets.

Clever Student—Edward Moore, of Newburgh, now a student at Syracuse university, has, it is reported, just received a check for $5,200 for his invention of an improvement in a gas engine sparker. The new device switches the current which runs the sparker automatically when the gear lever is operated. This does away with an extra operation. Moore is a freshman. Before going to college he was, it is said, paid $8,000 for a combined starter and regulator for electric motors.

New Concern—The Auto & Power Appliance Co., with offices at 357-359 The Arcade, Cleveland, O., has been recently organized for the purpose of manufacturing and marketing a line of motor vehicle parts and power appliances. The officers and directors of the company are all Cleveland men, as follows: E. L. Russell, president; J. A. Krider, vice president; F. C. Schneerer, secretary and treasurer; directors, J. Arthur House, F. A. Richards, E. L. Russell, F. C. Schneerer, J. A. Krider, G. F. Ball and C. E. Thompson. The company is incorporated under the laws of Ohio, with a capital stock of $200,000. This company has acquired the rights of manufacture from the Industrial Engineering Co. to a line of motor vehicle parts. In addition to manufacturing and marketing its own apparatus, it is the purpose of this company to solicit contracts from other companies for the manufacture of motor vehicle parts.

Another Ohio Factory—The Lehr Agricultural Co., of Fremont, O., will have a new touring car of 20 horsepower on the market the first of the year, the company just recently deciding to go into the manufacture of automobiles.

Fahey Fixed—Ed Fahey, brother of Tom Fahey, of the Locomobile company, has been appointed to the direction of the Boston branch house of Continental tires. Fahey takes up his new work November 1. For the past year Fahey has been attached to the Hartford sales department of the Electric Vehicle Co.

On Demonstration Tour—George D. Wilcox, in charge of the car of the Gearless Transmission Co., of Glen Falls, N. Y., which is making a demonstration trip through the west, spent last week in Detroit, from which city he started out to go through Michigan to Chicago, Indianapolis, Columbus and Cleveland and then to New York. He expects to make the metropolis by November 20.

Parish Promotes—Robt. E. Jennings, of the Carpenter Steel Co., of Reading, Pa., will be president of the new company being organized for the purpose of manufacturing automobile frames made of nickel chrome steel. J. E. Sullivan will be one of the officers. The general manager is to be Neff E. Parish, organizer of the Parish & Bingham Co., of Cleveland. The name of the new company has not been decided on, but it will probably be the N. E. Parish Mfg. Co.

After New Store—The business done in Philadelphia during the past season by the local branch of Thomas B. Jeffery & Co. has demonstrated the inadequacy of the present quarters at 242 North Broad street. Manager W. F. Smith has been on the lookout for larger quarters for some time and is now dickering for a place which, if the negotiations go through, will give the Rambler the most palatial home on the row, it is claimed. Should the deal fall through, the present quarters will be enlarged and improved to the limit of their capacity.

Scots to Make Aster Motors—On top of the Darracq expansion as an assembling concern in England comes news of an arrangement between the Argyll company of Glasgow and Asters, the big French motor manufacturers, whereby the Scottish firm will manufacture motors for the English branch of the concern. The Argyll cars have been fitted with Aster engines for some years now and the arrangement is, no doubt, the outcome of initial confidence and satisfaction. Its underlying reason is probably a desire to get Aster goods on the colonial markets under the preference which is given to all British-made goods, besides which the colonial is averse to purchase foreign cars whose replacement will be difficult and take an exasperating length of time to obtain. How this arrangement with the Argyll concern fits in with the acquisition by Asters of 5 acres of land in the northwest suburbs of London for the ostensible purpose of erecting a factory to produce Aster motors is difficult to see.

Old Kirk Plant Sold—The automobile plant of the Kirk Mfg. Co., of Toledo, O., the property of which recently went into the hands of the Consolidated Mfg. Co., was last week sold to a Cleveland firm which will manufacture burial vaults.

Costly Button—It is declared that at Madison Square Garden there will be no wholesaling of trade tickets as at previous shows, and no coupon books. A badge or button will be given to employees of exhibitors when properly vouched for and additional buttons in case the original ones are lost will cost the unlucky one $5 each.

After Duryea Plant—Efforts are making to induce the Duryea Co., of Reading, Pa., to establish a marine motor factory, garage and repair shop at Pleasantville, N. J. Since the opening of the new boulevard across the meadows to Atlantic City, about 5 miles distant, the Pleasantville board of trade has begun to realize that a big automobile plant would boom its town immensely. If the deal goes through the plant will be located on the new road.

Renault Models—C. A. Tileston, president of the company handling the Renault in America, has just returned from France, where he spent 1 year in the works of Renault Brothers at Billiancourt. He brings back with him the information that the models for 1906 will include a 20-30-horsepower and a 14-20-horsepower four-cylinder machine, an 8-horsepower and a 10-14-horsepower two-cylinder cars, as well as a 40-50 horsepower model.

England's Second-Hand Trade—The extent of the second-hand trade done in the United Kingdom is indicated in the return of the business done by the motor house in Euston. It is certainly the largest of England's second-hand dealers, but that one firm should be able to turn over $1,271,734.96 worth of second-hand motor cars in 12 months is indicative of the volume of business done. The number of cars sold was 1,897, so that the average price is easily seen to be low, but it will be lower next year, it is expected.

Strict Show Rules—For the dealers attending the Madison Square garden show a new registry plan has been adopted which will enable them to visit the exposition without charge up to 11 o'clock each day, but which will prevent others from securing the same privilege. Upon entering the first day a dealer will be required to sign the registry book and also sign his name on the back of his card. To come in the next day he will have to again sign his name, which must be the same as the signature on the back of the card. The idea is to prevent other than

Digitized by Google

legitimate dealers from securing special privileges at the big exhibition.

Durphy with Columbia—W. H. Durphy, formerly manager of the Boston branch of the Deeauville company, is now located with the Columbia people of Hartford, it is reported from the east.

To Make Goggles—The Ophthalmuscope Co., of Toledo, O., which began manufacturing goggles for engineers and firemen about 2 years ago, has decided to equip a plant of its own at once. L. Bateman, manager of the concern, has decided to go into the manufacture of goggles for automobilists, two patterns having been gotten out.

Snap for Chauffeurs—The Banker Bros. Co., of Pittsburg, has decided to provide for the comfort of its chauffeurs by furnishing them with a big lounging room. On the second floor of the new addition a room has been fitted up for the use of all drivers connected with the garage. There will be a billiard table, an abundance of reading matter and pictures and plenty of comfortable lounging chairs.

A Franklin Test—A 1,000-mile test has just been completed by the H. H. Franklin Mfg. Co. One of its model G cars rated at 12 horsepower was used. On the trip the car carried, in addition to the driver, a baggage load of over 1,000 pounds. The test took place over a course from Syracuse to Albany, then to Boston via Pittsfield over the Peru mountains to Worcester, then from Boston to Providence, then to New York, thence up the Hudson to Peekskill and via the Catskills home.. No repairs or adjustments were made to the car en route, it is claimed by the demonstrators.

Baker Gets the Premier—S. H. Baker, for several years identified with the Boston branch of the Rambler company, has secured the local agency for the Premier and has organized a company.

In for Himself—Johnny Wells, formerly of the Philadelphia Rambler branch and later connected with the Packard and Autocar agency there, has embarked in an automobile livery business in the Quaker city.

The Franklin Outlook—The H. H. Franklin Mfg. Co., of Syracuse, N. Y., has, it is asserted, already contracted for one-half of its output for the coming season. The sales manager, C. Arthur Benjamin, is taking a trip through the New England states in the interest of the company. Several improvements are being made at the plant, among which are the erection of a lodge for employes and others who have occasion to enter and leave the works in an automobile.

Winton Changes Agents—As a result of the Winton exhibition car's trip through the country Charles Shanks has made some changes among the Winton representatives in the larger cities. In Buffalo the Winton is now handled by the Centaur Motor Car Co.; in Newark, N. J., the agency has been placed with C. S. Calvert; in Pittsburg the Standard Automobile Co. has been retained; in Indianapolis the Indiana Automobile Co. succeeds the Fisher Automobile Co. as sales agent in Indianapolis and southern Indiana; in St. Louis the Western Automobile Co. has taken the agency for the Winton for 1906.

Henry Moves Up—David W. Henry, of Buffalo, has been made general representative of the Electric Vehicle Co. Mr. Henry will continue to travel with the Columbia line of cars and is now preparing for a trip from New York to San Francisco. He will have charge of the traveling salesmen, routes and agents in the field and will spend the larger portion of his time in Hartford.

Cutting's Idea—Gen. John T. Cutting, the new representative of the Olds Motor Works in New York, has conceived and will put through on election day a novel and ambitious scheme in celebration of the fifth anniversary of the introduction of the Oldsmobile in New York. It will combine a run, a race meet and a luncheon, with the addition of a drawing for an Oldsmobile runabout by way of a souvenir. The main events will take place at Empire track.

Change in Buick Plans—At a meeting of the directors of the Buick Motor Co., of Flint, Mich., it was decided to change the plans for its new building so as to provide a main building 350 by 64 feet in ground dimensions, with an east wing 250 by 64 feet and a west wing 100 by 64 feet, the change being made with a view to furthering the lighting facilities of the structure. The work of constructing the main building and the wings will be carried as far into the winter as the weather will permit.

THE INTERNATIONAL EXCHANGE

Washington Statistics—Interesting details of the import and export trade in automobiles and parts during September and the nine months ending with September have been made public. The compilations show that ninety-seven cars, valued at $349,622, and parts valued at $21,652 were imported during September, while during the nine months ending with that month 295 cars, valued at $1,065,458, and parts valued at $68,753 were imported.

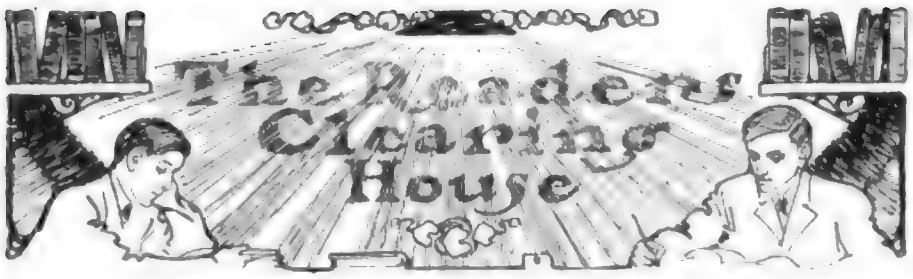
Chance in South Africa—Mail advices state that among the many interesting lectures given before the British association at Cape Town, South Africa, was one in the engineering section by A. T. Hennessy, chairman of the Automobile Club of South Africa. There is no question that there is an enormous future for motor cars in South Africa, both for pleasure and commercial purposes. In Cape Town alone during the last 2 years the number of cars in use has more than doubled. The old battle of the steam car as the competitor of the internal combustion engine was again brought up at the meeting referred to, Maurice Hely-Hutchinson, son of Governor Hutchinson, who has a 15-horsepower White steamer, being a very strong advocate for steamers, but if well-posted automobilists are to be credited he does not know his South Africa sufficiently to realize the difficulties of water, to say nothing of the fact that what water is obtainable on the Karoo is usually so brackish that it has a bad effect upon the steam pipes. Chairman Hennessy, Professor Hele-Shaw and most of those who have had any South African experience strongly favor the gasoline car and consider it should be specially built for local conditions, which means that the wheels should be fairly high to allow of ample clearance from the ground, to avoid bumping and also for purposes of crossing drifts. The cars should be geared low in order to cope with the numerous hills that abound in some sections.

Tip to Exporters—A number of decisions bearing on the automobile import trade of the Australian commonwealth have been made, as follows: Motor parts of automobiles, when imported with the car to which they belong, shall be classified as vehicles and parts, not elsewhere included in the tariff act, dutiable at 20 per cent ad valorem. Otherwise they will be treated as machinery and appliances, not elsewhere included, electric, at 12½ per cent ad valorem. Rubber tires, when imported with the automobiles to which they belong, shall be classified as vehicles, not elsewhere included, and parts, not elsewhere included, dutiable at 20 per cent; otherwise as manufactures of india rubber, with 15 per cent duty. Accumulators, when an integral part of an engine for motor cycles, will be classified as machinery and appliances, not elsewhere included, electric, dutiable at 12½ per cent.

What They Want in India—The Belgian consul at Bombay calls attention to the extraordinary increase which has been taking place in the importation of automobiles into India. They are becoming more and more popular, particularly among the wealthy natives. In Bombay all types find a good sale, including luxuriously fitted coupes and victorias. The ordinary car seating four people is best in demand. Motor cycles are being introduced and seem likely to come rapidly into general use.

Swedes Take to Motoring—A French commercial adviser at Helsingfors, Sweden, reports that the use of automobiles has for some time past been increasing in the large towns of Sweden, such as Stockholm and Gothenburg, and that the present moment, when the fashionable world is evincing so much interest in the automobile, is a favorable one for attacking the market. Strong cars, moderate in price and with a simple but tasteful body, are suitable for the Swedish market. The cities offering the best opportunities are Stockholm and Gothenburg; then Malmo, which is a wealthy center. Norrkoping should not be neglected, as it is a rich town with excellent roads. As nearly all Swedish towns and villages are provided with electric stations, a good market could be found for electrics. Motor cycles have a good sale in the north of Sweden and Finland, consular reports show.

Digitized by Google



VIBRATOR TROUBLES

Chicago, Ill.—Editor MOTOR AGE—While running along Drexel boulevard recently I observed a pile of dirt ahead of me in the darkness. Realizing that a slight bump would be there, I closed the throttle, retarded the spark and applied the brakes gently without releasing the clutch. On going over the dirt there was a slight bump. Almost immediately the engine—double opposed—became sick and bumped along, not giving half its power. The motor was given gas, but no better results obtained; the coil was all right and so was the compression. A slight examination of the coil, however, revealed that one of the vibrators had stuck. A touch of the finger was sufficient to loosen it, when the motor at once regained all of its power. What caused the vibrator to stick to the end of the core? The same evening another driver stated that he had similar difficulties and was compelled to put several thicknesses of paper over the end of the core to prevent sticking of the vibrator. Can you give a reason for this and a better method of avoiding it?—R. P. C.

The armature sticks to the core because both are of material subject to magnetic attraction. If otherwise the spark coil would be an impossibility. Both are electro-magnets—that is, they are influenced only when the current is present. There is always some magnetism left when the current is off. This is called residual magnetism and with some grades of iron is greater than with others, often being sufficient to hold the armature to the core for some time. To prevent actual contact of the core and armature some makers cap the core with a brass ferrule; others have a stop, against which the armature strikes previously to coming in contact with the core. A piece of paper attached to the core with shellac will prevent contact, which is all that is necessary, as the residual magnetism is not of sufficient strength to hold the armature unless the parts are actually in contact. The experience is an impossibility, as with the armature on the core no spark would be produced, as will be shown. Referring to the drawing, A is the platinum-pointed adjustable contact screw, B is the vibrator and C is the core. When the circuit is closed the core attracts B and as B moves toward C the contact at the platinum points is broken. When this is broken the core C does not further exert an attraction on B and so B flies back and makes the contact, which reenergizes the core, pulls B and breaks the contact. These successive operations continue during the time the circuit breaker is in contact. The assumption is that B is stuck to C. Such being the case, the platinum screw and the contact on the armature do not touch. These not being in contact, no current can possibly get to the coil, so of course a spark cannot be produced. In all vibrator coils the same principle is involved; that is, that the armature breaks the contact before it touches the core. If this were not the case the vibrator would be inoperative. It being the case, it follows that when the armature touches the core the circuit remains broken. In view of the fact it is difficult to see how the experience is possible, as with the armature on the core the motor would be dead. The solution probably lies in the fact that one cylinder only was working, the other being dead through a sticking vibrator.

AUXILIARY EXHAUSTS

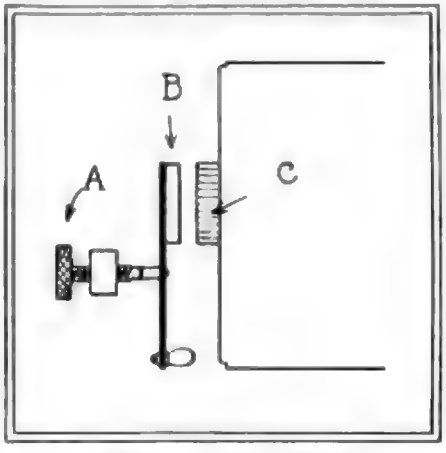
Chattanooga, Tenn.—Editor MOTOR AGE—In a recent issue of MOTOR AGE, when the Franklin air-cooled automobile was described, an auxiliary exhaust was said to be used near the bottom of each cylinder. This port, according to the description, was placed ¼ inch above the top of the piston when at the bottom of the stroke. I can't see how much of the exhaust will pass out through this opening, as it is uncovered by the piston walls for an exceptionally short period of time. The stroke of the engine is 3¼ inches and when running at 1,000 revolutions the piston travels 6,500 inches every minute, besides stopping at the top and bottom of the stroke 2,000 times. The auxiliary exhaust port is open only while the piston travels ¼ inch on the down stroke, stops at the bottom and travels ¼ inch up. What amount of gas can escape during this time? If a sufficient quantity does escape, I see no reason why the auxiliary exhaust would not be an excellent thing, but at present cannot see much practicability in it. At what rate of speed does the mixture travel when passing through the inlet valves in this machine, which are 1¾ inches in diameter and have a lift of 11-32 inch? The exhaust valves are the same size, and the auxiliary exhaust ports are 1 3-16 inches in diameter.—H. C.

The velocity of gas through the auxiliary exhaust port would depend upon the pressure at the end of the stroke, which is variable, depending upon the mixture, compression and spark lead. The object is to take some of the heat away from the hot cylinder and incidentally this practically reduces the pressure on the exhaust valve to atmospheric pressure. Without going too deeply into the question it is sufficient to say that if this auxiliary exhaust port did not reduce the cylinder pressure to atmospheric pressure during its short time of opening, the two cycle engine would be an impossibility, as its inlet and exhaust are both controlled by this means. Such speeds as 1,800 and 2,000 revolutions per minute are obtained from two cycle engines of the same bore as the Franklin and with but slightly larger exhaust port area than the Franklin auxiliary exhausts. If the pressure in the cylinder at the end of the stroke were not within 4 pounds of atmospheric no charge would enter and the motor would be inoperative.

INLET VALVE CONTROL

New Orleans, La.—Editor MOTOR AGE—What are the advantages claimed for controlling the speed of a motor by the inlet valves? Variation in some machines is accomplished by having cone-shaped cams on the cam shaft, so that the amount of lift given the valves can be varied from the seat. In other machines the opening of the inlet valve is restricted by air pressure. In both of these styles the carbureter is not adjusted while driving the machine, a fixed adjustment being made when the carbureter is attached to the car. The spark is advanced and retarded. Other machines are made so that the action of the inlet valves is not variable, but the throttle and spark are the only controlling means. Which of these systems is the better and what are the advantages and disadvantages of each?—J. E. E.

The first two systems are quite similar. Regulating the inlet valve lift, by either mechanical means or air pressure, throttles the motor close to the cylinder. It is acknowledged that this is the most advantageous position for a throttle. The third method, carbureter throttling, has the disadvantage of a considerable volume between the point of throttling and the cylinder. The mechanical variable inlet gives a very smooth and flexible motor, provided the variable mechanisms for each inlet are so constructed and interconnected that for all positions each valve opens exactly the same. With the air pressure system each valve must open the same, as the air pressure tending to keep the valve seated is the same on each valve, and the suction is the same. The condition for each to open the same depends upon each inlet spring having equal tension, each valve and its piston having equal frictional resistance to its movement, and the inlet valve pistons must fit alike. The conditions in both of these cases are easily fulfilled by correct design and manufacture of the parts.



AN ORDINARY COIL VIBRATOR

Digitized by Google

LEGAL LIGHTS AND SIDELIGHTS

ALIBI UP TO OWNER

Judge Utley, in the central district court at Worcester, Mass., at the close of the hearing in the case of the commonwealth vs. Chester W. Bliss, charged with violation of the automobile speed law in Leicester, made a ruling that the government is not required to prove the identity of automobilists violating the speed law. He said that an automobile owner, who is accused of illegal speeding, and who claims he was not in the machine when the laws were violated, must prove an alibi to be acquitted. Counsel for the defendant asserted that Bliss was not in his machine, and that the owner is no more responsible for the violation of the speed law with his machine by other persons than is the owner of a horse, wagon or other vehicle. A fine of $15 was imposed, but as Mr. Bliss was not in court, the sentence was postponed. In three other cases Contable Quinn was unable to identify the defendants as the alleged violators of the law, but the court imposed a fine of $15 in each case.

ATLANTA HAS A LAW

Atlanta, Ga., adopted its automobile ordinance, has been adopted by the general council and it now goes to Mayor Woodward for his approval. The ordinance provides principally for a board of automobile examiners, which will pass upon all applicants for licenses. It also provides that all present licenses become void within 30 days after the approval of the measure. Two amendments were placed upon the ordinance, one by Councilman Quillian, providing that all licenses expire on June 30 of every year, and the other by Councilman Bruce, providing that no automobile be operated by anyone who is under the influence of intoxicants.

AMEND MOTOR CAR MEASURE

Kansas City's new automobile ordinance was passed by the upper house of the council last week, with a number of amendments that make it necessary to send the ordinance back to the lower house. Before the ordinance got through the upper house the lower house adjourned. There is little probability that the lower house will concur in the amendments. In that event a conference committee will be called for and the amendments will then be thrashed over again. The amendments adopted by the upper house were briefly as follows:

Sections 3 and 4, providing for the licensing and examination of chauffeurs, were stricken out entirely.

That part of section 6 providing for the revocation of the license on the second conviction of violation of the ordinance was stricken out.

The eastern limit of the district in which the speed is limited to 8 miles an hour is extended from Troost avenue to Woodland avenue. The other limits of the district are the Missouri river, Eighteenth street and the state line. On the boulevards and elsewhere in the city the speed is restricted to 12 miles an hour.

On approaching and turning into intersecting streets the speed must be reduced to 4 miles an hour

Operators are not required to sound their horns on meeting vehicles coming towards them. It is required only on approaching vehicles from the rear.

The amendment eliminating the examination of chauffeurs was recommended by Aldermen Jewett and Woodson of the judiciary committee, who gave a hearing to the attorney and two members of the automobile club. The representatives of the club were willing to concede the changes in the speed regulations in return for the striking out of the license and examination sections. The machines themselves are subject to a vehicle tax under another ordinance. Alderman Sloan alone voted against this change.

TIMELY SUGGESTIONS MADE

Probably the most important announcement ever made affecting the interests of Washington automobilists was issued this week, when District Commissioner West, who has immediate supervision of the automobile regulations, informed President Duvall, of the Automobile Club of Washington, that it was the intention of the municipal authorities in the future to submit to the club all proposed amendments to the regulations, in order to obtain the views of those directly affected by any new regulations. This pleasing proposition of Commissioner West was brought about by a communication from H. C. Hunter, a member of the club, who suggested the advisability of incorporating in the local regulations a provision similar to that in force in New Jersey, making it a misdemeanor for any one, without the consent of the owner, to operate an automobile in the public streets and other places. Commissioner West thought this clause in the New Jersey law rather sweeping, and sent it to President Duvall with the request that the club should express its views on the subject. President Duvall, who is a lawyer, gave the matter careful consideration and finally proposed a substitute to the New Jersey clause as suggested by Mr. Hunter, to the effect that "any person who operates a car on the streets in the absence of the owner and without the written consent of the latter shall be guilty of a misdemeanor and upon conviction shall be punished by a fine of not less than $100 or more than $500, or imprisonment for 1 year, or both. Provided, that nothing in this statute shall be construed to prohibit the delivery of automobiles to points desired by the owner, or the return of machines from any point to the garage where same are stored, by a regularly licensed operator connected with said garage, provided that such delivery or return shall be accomplished by the shortest practicable route."

President Duvall set forth at length the wisdom of adopting the proposed regulation, and he likewise asked in behalf of the club that a regulation be adopted imposing a fine of from $50 to $500 upon any person willfully tampering with or destroying or damaging any part of an automobile, or taking away any of the lamps or parts of any automobile left temporarily on the streets or elsewhere.

The club is desirous of having a new police regulation enacted whereby heavy punishment can be inflicted upon persons who throw stones or sticks at passing automobilists. This is an evil that is growing in Washington and unless curbed by the police it will eventually lead to serious accidents. Still another evil that has caused much expense to automobilists is the habit of many persons throwing glass and other sharp substances on the streets.

CLAIMS CONFLICT OF LAWS

A test case is being made at Providence, R. I., of the law regulating the speed of automobiles. Philip E. Eddy, whose country house is at Rumstick Point, on Narragansett Bay, was tried recently in the district court at Warren for exceeding the speed limit of the town of Barrington last Sunday. John G. Aldrich pleaded guilty and paid his fine. Mr. Eddy didn't. R. B. Comstock, of Providence, counsel for Mr. Eddy, claimed that the ordinance regulating the limit of speed at 15 miles an hour conflicted with the general laws, and therefore Mr. Eddy committed no infraction. It was claimed that the town had a right to make an ordinance regulating the speed of automobiles without the compact part of the town, but no power to make an order regulating the speed within the compact part of the town, as that is regulated by the statutes. Judge Bosworth, reviewing the claims set up by counsel for the defendant, said that there appeared to be no compact section in the town of Barrington; that it was an open country and unlike Bristol or Warren.

DRUNKS BEWARE

With a view of getting after drunken chauffeurs and automobilists, State Senator Wood McKee has already drawn a bill for the next session of the New Jersey legislature, which will impose a fine of $1,000 on automobilists who may be arrested in an intoxicated condition. Senator McKee explains that he is inspired by the several automobile accidents of the past when a number of people lost their lives, through the carelessness of drunken automobile drivers. He wants the law so severe that drunken men will keep out of the machines, especially chauffeurs who take their owners' machines and wreck them. The bill reads:

"Any man in a drunken condition driving an automobile will be liable to summary arrest without warrant and will be liable to indictment and compelled to furnish bonds to guarantee his appearance when wanted. Should he be convicted the presiding judge will have power to send him to state prison not exceeding 3 years or impose a fine of $1,000 of both."

Digitized by Google

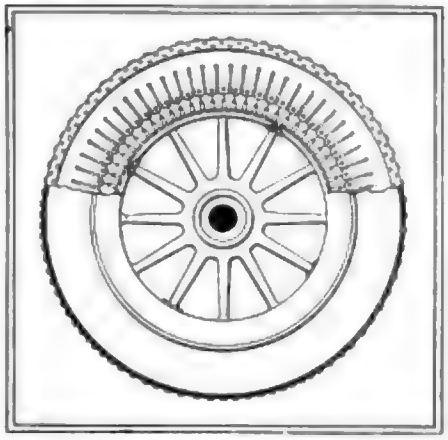
Current Automobile Patents

Boat Automobile—No. 802,852, dated October 24, to Edward Fournier, of North Yakima, Wash.—The inventor has a combined automobile and motor boat, the combination being such that should a portage have to be made, axles and road wheels can be quickly attached and the rudder and propeller removed. In case of traveling in water the road wheels are readily detachable and the rudder and propeller fitted in place; the propeller shaft from the gear case, being jointed, can easily be connected either with the propeller for marine use or the center of the rear axle for land traveling.

French Wood Tire—No. 802,746, dated October 24; to Auguste A. Gilles, of Nogent sur Marine, France. The inventor's wood tire forms part of the rim of any automobile wheel. On either side of the rim is a ring-like part made up of sections pivoted together at adjacent ends and with legs at the ends extending into sockets in the rim. The legs are bored, forming cylindrical seats, in which are placed coil springs for resisting jar. Between these two rings are block pieces composed of wood or any other material. These blocks are retained between the rings composed of the sections referred to and are free to move up and down as the wheel revolves.

Four-Wheel Drive—No. 802,442, dated October 24; to John A. Cary, of Denver, Colo.—The inventor has an automobile construction in which all four wheels of the car are used in driving. The motor is carried in any desirable position and drives to the axles through drive shafts that have journals in the framing of the vehicle. The front axle is of the pivotal type, steering knuckles not being used, and steering is through a steering wheel, a bevel gear on the bottom of the steering column driving a horizontal worm that works in a toothed quadrant in the frame.

Tire Covering—No. 802,755, dated October 24; to Pierre O. Casavant, of Point St. Charles, Quebec.—The inventor's cover for pneumatic tires is a chrome leather casing with a reinforced tread, consisting of an extra strip around the tread, of chrome leather, and in this strip are two or three series of heavy rivets with broad heads. The edges of the cover are serrated, long lips extending radially covering the sides of the tire. Just slightly nearer the center than the ring formed by the ends of the lips is a linked chain, not continuous but made up of four or five sections. To the links of this chain are attached the outer ends of hooks that engage with the inner ends of the teeth or lips on the cover. When tightening the cover in place the turnbuckles holding the several sections of the chain together are tightened, clamping the whole cover firmly in place.



CASAVANT'S TIRE COVER

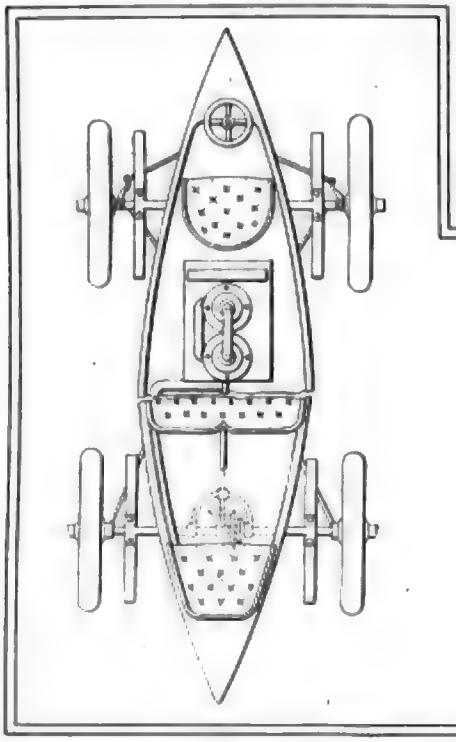
Lamp Support—No. 803,846, dated October 24; to Joseph L. De Good, of Detroit, Mich.—The invention is a swiveled support for carrying the head and search lights of an automobile so that they will be turned in unison with the front wheels, the object of the invention being the lighting of the road directly in front of the automobile when turning corners. The lights are connected or supported on brackets, connected by rods with the tie rod between the steering knuckles.

Spring Wheel—No. 802,643, dated October 24; to Charles E. Huxley, of Chicago.—The spring wheel described has a sectional rim, the sections being of length to reach from the end of one spoke to the end of the next, where they are pivoted together and the spoke attached to one of the sections close to the pivot. The spokes consist of two tubular parts, one of large diameter attached to the hub and extending three-quarters of the distance to the rim, and the other part attached to the rim of less diameter, being within the larger part, the two parts being as a piston within a cylinder.

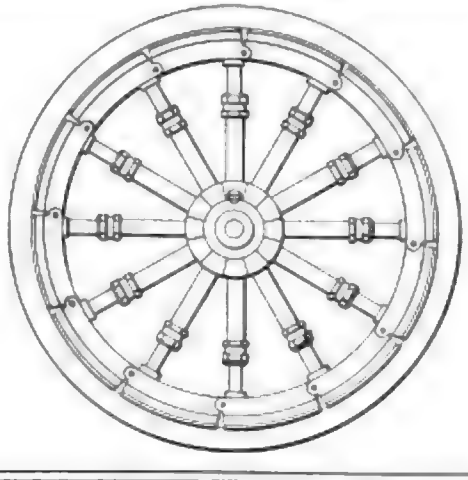
Gas Tire Inflator—No. 802,905, dated October 24; to Gabriel A. Borbick, of Los Angeles, Cal.—The invention relates to a method of inflating pneumatic tires, other than that by pump pressure. On the back part of the automobile, beneath the frame, is a cylindrical tank containing liquid carbon dioxide, and in conjunction is a water tank, by means of which the former compound can be made to give off gas. On the tank is a reducing valve attached to a flexible tube connecting the tire valves. In the tank containing the liquid carbon dioxide is space for the accumulation of gas, so that a pressure head can be obtained before starting inflation.

Gabriel's Horn—No. 802,386, dated October 24; to Claud H. Foster, of Cleveland, O.—The invention referred to is the Gabriel horn, now used on motor cars. The horn consists of three parallel tubes, similar in construction to organ pipes, with a reed in each. The tubes, or horns, are connected with the muffler pipe, so that part of the exhaust can be directed into the horn whenever desired. Arrangements between the horn and the exhaust pipe are such that when the exhaust pressure varies the horn produces a uniform musical sound.

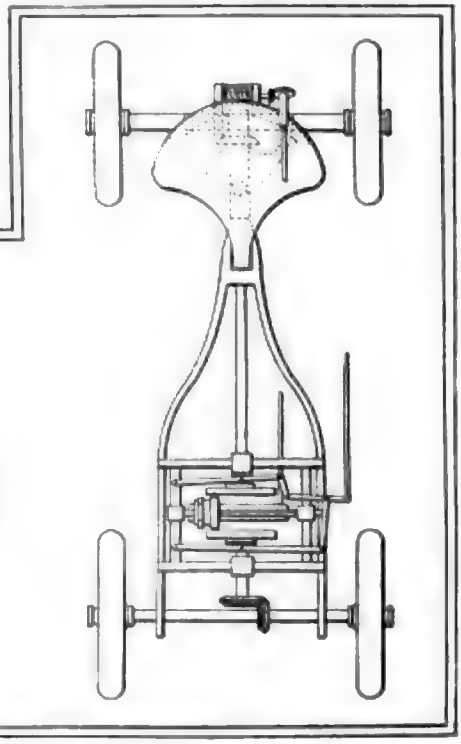
Leather Tire Covering—No. 802,600, dated October 24; to Oliver D. Salisbury, of Owosso, Mich.—The pneumatic tire described has an inner air chamber and an outer casing made of leather. The outer casing has its edges adjacent to the wheel rim turned outward and holes in them for attachment to the rim. Beneath the tire is a bed strip on which it rests. This strip projects on either side beyond the rim of the wheel and has holes corresponding with those in the edges of the casing through which pass radial bolts secured to a metal ring encircling the wood rim.



FOURNIER'S BOAT AUTOMOBILE



HUXLEY'S SPRING WHEEL



CARR'S FOUR-WHEEL DRIVE

Digitized Google

PUNCTURE DETHRONES A KING

THIS is a kingly tale, a romantic sort of a recital of the woes of a monarch and how a revolution was decided on an island in the South Seas by the bursting of a rear tire on an automobile, which encompasses the downfall of a ruler of a dusky tribe of New Zealanders. While the story teller is no Richard Harding Davis, he is not half bad as a spinner of yarns and reels off his tale with a fluency that gives it a semblance of truth. As to whether or not he can back up his story with facts, that is not required of him. If it was, he could, no doubt, prove what he says by taking a map of New Zealand and pointing out exactly the location of the isle in question. That should be enough to satisfy the most exacting—particularly if the doubter is anxious to hear a good story. The man who stands sponsor for all that is to follow is credited with being a salesman for an automobile firm sent to the antipodes to work up trade there for American cars. He is not overanxious to divulge his identity. According to him, he went to New Zealand after a month's stay in Australia and while there made the acquaintance of the American consul at Auckland and was induced by the latter to go to Barren island, which is between Tasmania and New Zealand. The American consul accompanied him. The scenery of Barren island is the antithesis of its name and the Yankee consul promised that a trip in the automobile through the island would not prove a waste of time.

When the salesman and the consul arrived by steamer, which touches the island every 2 weeks, they found the country to be in the throes of a revolution. There was but one representative of British authority on the island, the steamship agent, and he cared little for the social and political problems with which the aborigines were wrestling, provided they permitted him to sit, clad in his duck suit, under an awning and enjoy his pipe in peace.

"The kin question," said the automobile drummer telling the story, "was the cause of the agitation, showing that the dusky-hued people differ but little from their white brothers. The half-clad king, who was well along in years, was at war in a small way with his only son who had recently come of age and who, in establishing his harem, had raided his father's enclosure and carried off three of the most buxom houris owned by the old man.

"Naturally the old gentleman was incensed at this purloining of his property, and with warriors, numbering about 150, had chased the son into a jungle. So hasty was his flight that he was forced to abandon his lares and penates and necessary attachments, including his harem. The old man in revenge made a clean sweep and took all of his son's portable possessions, including the aforesaid harem, to him own domicile.

"Considerable surprise was expressed by the natives at the gasoline automobile. They took to their heels when the monster came in sight and viewed it only from a safe distance. The only thing of a mechanical nature they had ever seen was the steamship."

Through the medium of the passive steamship clerk the salesman made the acquaintance of the son of the ruler who had left his jungle and had taken refuge in the little storehouse of the steamship company. The son and heir was induced to ride in the automobile under promise of protection from the wrath of his sire.

"Well, sir," said the American in telling his tale, "the few hundred natives on the island were so taken with this demonstration of courage by their ruler's son that they put it up to the old man good and strong. They said in effect that if he was afraid to ride in the automobile he would have to relinquish not only his war club but his assortment of wives.

"The old gent kicked considerably, but finally climbed into the rear seat of the machine. He was trembling and was as white as any black man could possibly get. I pushed the lever well forward and put on the second speed. I soon increased this to the third speed and pushed the throttle well forward.

"We were tearing along the beach before the populace of the whole island, who were scantily clothed, at a rate of 30 miles an hour, the old chief hanging on for dear life, when a rear tire burst.

"When I picked myself up 20 feet away I looked for the car and saw that it had run into the surf and was a total wreck. The next sight of interest that met my gaze was the old chief doubled up on the sand lying as still as a petrified log. He was clad only in his dignity, his few clothes having been torn from his body. Sea water administered externally in plentiful doses soon restored him to a painful memory of what had happened. There was no doubting as to who was the real king on the island after that. The people looked upon the accident as a demonstration of the wrath of their gods toward the old ruler and he was a back number thereafter. His son was compassionate and permitted him to remove his hut to the other side of the island. The old man, though, was forced to leave all his valued possessions behind, not even an houri being permitted to accompany him and do his cooking. It was an awful come-down for the ex-king, who can blame his downfall solely to the automobile, or rather to the tire. Had the old boy stood on his dignity he could not have done worse and would not have been branded as being on the bad books of the native gods. It was hard luck, I'll admit, but the son beat father to it in getting into the band wagon of modern progress, so he reaped the fruits of his daring in taking advantage of my offer. I took the next ship for Hobart, Tasmania, where I awaited the arrival of a sample machine from Melbourne, Australia, our nearest agency. If anybody asks you, just tell them I've had enough of the king business."

NEW ZEALAND NATIVES SCARED BY AUTOMOBILE

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Sag Harbor, N. Y.—Liveryman A. K. Rogers is to sell his horses and open an automobile garage.

New York City—W. Irving Fickling, manager of the Auto Top & Cover Co., has been appointed agent for the Neuiport spark plugs and coils.

Detroit, Mich.—May & Wills, in the garage business at 11-13 Abbott street, have dissolved partnership. The business will be continued by David J. May.

Detroit, Mich.—W. C. Orell and Clark C. Hyatt have been appointed general agents for the Buick in Great Britain and Ireland. They will make their headquarters in London.

Troy, N. Y.—The Troy Automobile Exchange has testified to the secretary of state that the amount of its capital stock has been increased from $5,000 to $50,000, consisting of shares of $100 each.

Newport, R. I.—A repair shop at 86-88 John street has been opened by B. Morgan, who intends to carry on the manufacture of his patented single-piece inlet valves, as well as a general repair business.

Austin, Tex.—The Torreon Rubber Mfg. Co. has been incorporated lately with headquarters at Austin. The company is not a new one, but has already been supplying rubber to Germany and is now ready to extend the business.

Akron, O.—The Diamond Rubber Co. has increased its capital stock from $750,000 to $3,000,000. It is stated that the company will shortly make important additions to its plant in order to take care of the increasing demand for its goods.

Indianapolis, Ind.—The Fischer Automobile Co. has announced that it will handle several unlicensed makes of automobiles. It has the agencies for the Pope-Toledo, Oldsmobile and Winton, and in addition has arranged to handle the Premier, Maxwell, Stoddard-Dayton and the National in 1906.

Havana, Cuba—George Vernon Rogers, secretary of the Mitchell Motor Co., of Racine, Wis., recently spent some time in this city looking out for the interests of his company. The Havana agency for this concern has been turned over to the West Indies Transportation Co., of which Mr. Barnhardt is the manager.

Omaha, Neb.—T. M. Bromwell, for 2 years sales manager of the Rambler Automobile Co. of this city, has become vice-president and general manager of the Deright Co., which has been recently incorporated for $50,000, with J. J. Deright for president. The new company will begin operations about December 1.

New Albany, Ind.—The E. C. Walker Co. has sold a half interest in its business to E. C. Jacobson, of Louisville, Ky., and has erected a large factory at 1921-1923 Logan street, that city, where the company will continue the business of manufacturing the component parts of a steam car. In addition to this it will also manufacture a pneumatic shock absorber and a dust deflector.

Cleveland, O.—A. A. Stearns has placed contracts for the erection of a fine automobile garage at 401 Rosedale avenue.

South Bend, Ind.—The Tritt Electrical Mfg. Co. has removed to Union City, Ind., and is now established in the factory formerly occupied by the Union Automobile Co. in that city.

Toledo, O.—The Antler Stable Co., 120 Twenty-second street, has increased its capital stock from $25,000 to $50,000 and has changed its name to the Antler Stable & Garage Co.

Saratoga Springs, N. Y.—J. A. P. Ketchum has broken ground for a new garage to be built on South Broadway, south of Convention hall. The building is to cost $35,000.

Atlantic City, N. J.—Andrew P. Johnson is to erect an automobile garage that will cost $125,000 at 11 North Ohio avenue. Ground has been broken for the building and it is to accommodate fifty machines.

Detroit, Mich.—The Hayes Mfg. Co. expects to move into its new building early in November. Two brick buildings are being erected. E. A. Carpenter, until recently superintendent of the finishing department of the Packard Motor Car Co., has charge of the company.

Hammondsport, N. Y.—G. H. Curtiss is considering the removal of his factory to Rochester, where he will engage in the manufacture of his own motors. Until now they have been made by the Kirkham Motor Works, in Bath. The employees will be doubled and the factory considerably enlarged.

LATE INCORPORATIONS

Albany, N. Y.—The Automobile Supply Co. has been incorporated with a capital stock of $40,000.

Sharon, Mass.—The Tudor Farm Motor Car Co. has been incorporated with a capital stock of $15,000.

Columbus, Ohio—The Commercial Motor Trust Co. of Toledo has been incorporated with a capital stock of $20,000.

Trenton, N. J.—The Automobile Speedway Co. of New Jersey has been incorporated with a capital stock of $100,000.

New York—The Columbus Auto Exchange and Storage Co. of New York has been incorporated with a capital stock of $1,000.

New York City—The Alborak Auto Co. has been incorporated with a capital stock of $3,000. It will manufacture automobiles.

Hammondsport, N. Y.—The G. H. Curtiss Manufacturing Co. has been incorporated with a capital stock of $40,000. The company will engage in the manufacture of motors and motor cycles.

New York City—The Columbus Auto Exchange & Storage Co. has been incorporated with a capital stock of $1,000. The company is to maintain an automobile garage.

Albany, N. Y.—The Albany Garage Co. has been incorporated for the purpose of manufacturing, selling and storing horseless vehicles. The capital stock of the company is $50,000.

Aurora, Ill.—Articles of incorporation have been filed for the Practical Auto Co. with a capital stock of $100,000. The company will engage in the automobile manufacturing business.

New Brunswick, N. J.—The Middlesex Motor Co. of 95-99 New street has been incorporated with a capital stock of $50,000. It will manufacture automobiles, bicycles, bicycle parts and motor cars, etc.

Kansas City, Mo.—The Buick Motor Car Co., which will handle the Buick exclusively in Kansas, has moved to its new garage at Fifteenth street and Virginia avenue.

Lansing, Mich.—The Olds Motor Works has just shipped the first consignment of cars to its Paris agency. In the lot were seventy-five cars—four-cylinder, two-cylinder and runabouts.

Detroit, Mich.—The American Electromobile Co., with offices in the Penobscot building, is negotiating for a site on which to erect a factory for the manufacture of automobiles.

Pittsburg, Pa.—A two-story and basement building is to be erected by the Atlas Automobile Co. The building is to cost about $35,000 and will have accommodations for about 300 cars.

Kansas City—The Strang Electric-Gasoline Car Co., incorporated for $100,000, with A. F. Hunt, Jr., of New York as the leading stockholder, will build a combination gasoline-electric motor that can be used in commercial vehicles.

Cleveland, O.—The Standard Automobile Co., of Cleveland, has been formed with $10,000 capital stock by George H. Smith, F. B. Williams, M. G. McAlleman and George H. Kelley. The company will handle and repair automobiles.

Boston, Mass.—C. S. Henshaw, New England representative for the Thomas Flyer has closed with W. L. Wilcox at Fall River, Mass., and has renewed contracts with George J. Donahue, of Brockton, Mass., and the Reichert Automobile Station, of New Haven, Conn.

Cleveland, O.—The Brew & Hatcher Co., of Cleveland, which for several years past has conducted a factory for the manufacture of automobile parts and special material to order, has been succeeded by the Hatcher Auto Parts Co., Mr. Brew having retired from the company.

South Bend, Ind.—The W. L. Casaday Mfg. Co. has about concluded to drop automobile manufacturing and devote its efforts to the development of stationary gasoline engines. Mr. Cleveland, until recently manager of the company, has gone to California with the intention of taking up his residence there.

Kansas City, Mo.—Articles of incorporation of the Strang Electric-Gasoline Car Co. were filed with the county recorder. The capital stock of the company is $100,000. The company has patented a combination electric-gasoline motor power that can be employed in the moving of any class of vehicle designed to carry freight or passengers.

Muncie, Ind.—The new manufacturing company, to be known as the Muncie Auto Parts Co., has been organized with a capital stock of $15,000. The company is to make automobiles and automobile machinery of all kinds. It is expected that the manufacture of steering apparatus will be begun in a few weeks. Hugh L. Warner is to be the superintendent of the plant when it starts.

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.
W. GRANT MURRAY, Second Vice-Pres., Adrian, Mich.
S. W. MERRIHEW, Third Vice-Pres., 156 Nassau St., New York.
FRANK A. EGAN, Secretary, 52 Nassau St., New York.
FREDERICK B. HILL, Treasurer, 32 Bluford St., Boston.
National Headquarters Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it involves the cooperation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

MORE STATE DIVISIONS

This week the division of six more states into districts is announced. The work of electing representatives from these districts to compose state boards of officers will be taken up during November, and the delegates to the national assembly will be elected in time for the February meeting, when the active work of the league will be extended in all directions. The divisions are as follows:

MISSOURI DIVISION

District 1, county of St. Louis; district 2, counties of Jefferson, Francois, Sainte Genevieve and Perry; district 3, counties of Madison, Wayne, Bollinger, Cape Girardeau and Scott; district 4, counties of Butler, Stoddard, Mississippi, New Madrid, Dunklin and Pemiscot; district 5, counties of Ripley, Oregon, Shannon, Carter, Reynolds, Iron and Dent; district 6, counties of Washington, Crawford and Phelps; district 7, counties of Franklin, St. Charles, Warren, Montgomery and Lincoln; district 8, counties of Audrain, Pike, Monroe and Rails; district 9, counties of Shelby, Marion, Lewis, Knox, Clark and Scotland; district 10, counties of Macon, Adair, Schuyler, Putnam, Sullivan, Mercer, Grundy, Linn and Livingston; district 11, counties of Randolph, Howard, Saline, Chariton and Carroll; district 12, counties of Boone, Callaway, Cole, Osage, Maries and Gasconade; district 13, counties of Miller, Pulaski, LaClede, Dallas, Hickory and Camden; district 14, counties of Texas, Howell, Ozark, Douglas, Wright, and Webster; district 15, counties of Taney, Christian, Stone, Barry, Lawrence, Newton and McDonald; district 16, counties of Greene, Polk, Cedar, Dade, Jasper, Barton and Vernon; district 17, counties of Saint Clair, Bate, Henry, Johnson and Cass; district 18, counties of Benton, Morgan, Moniteau, Cooper and Pettis; district 19, counties of Lafayette, Jackson, Ray, Clay, Platte, Buchanan, Clinton and Caldwell; district 20, counties of Daviess, DeKalb, Andrew, Holt, Atchison, Nodaway, Worth, Gentry and Harrison.

ILLINOIS DIVISION

District 1, county of Cook; district 2, counties of McHenry, Winnebago, Boone and Lake; district 3, counties of Jo Daviess, Stephenson, Ogle and Whiteside; district 4, counties of Lee, DeKalb, Kane, Kendall and Dupage; district 5, counties of Will, Kankakee and Grundy; district 6, counties of Bureau, Lasalle, Putnam, Marshall, Woodford, Peoria and Stark; district 7, counties of Henry, Knox, Warren, Henderson, Mercer and Rock Island; district 8, counties of Fulton, McDonough, Schuyler, Adams and Hancock; district 9, counties of Tazewell, Logan, Sangamon, Menard and Mason; district 10, counties of Livingston, Ford, DeWitt and McLean; district 11, counties of Iroquois, Vermilion and Champaign; district 12, counties of Edgar, Clark, Cumberland, Coles, Douglas, Mouldrie, Piatt and Macon; district 13, counties of Shelby, Christian, Montgomery and Macoupin; district 14, counties of Cass, Morgan, Greene, Jersey, Calhoun, Scott, Pike and Brown; district 15, counties of Madison, Bond, Clinton, Washington, Randolph, Monroe and St. Clair; district 16, counties of Fayette, Effingham, Jasper, Crawford, Lawrence, Richland, Clay, Marion, Jefferson, Wayne, Edwards and Wabash; district 17, counties of White, Hamilton, Gallatin, Saline, Hardin, Pope, Massac, Pulaski, Alexander, Johnson, Union, Williamson, Jackson, Franklin and Perry.

MINNESOTA DIVISION

District 1, county of Ramsey; district 2, county of Hennepin; district 3, counties of Dakota, Goodhue and Wabasha; district 4, counties of Dodge, Olmsted, Winona, Houston, Fillmore and Mawer; district 5, counties of Steele, Freeborn, Faribault, Blue Earth and Waseca; district 6, counties of Rice, Lesueur and Scott; district 7, counties of Nicollet, Sibley, Carver and McLeod; district 8, counties of Martin, Watonwah, Cottonwood, Jackson, Nobles, Murray, Pipestone and Rock; district 9, counties of Brown, Redwood and Renville; district 10, counties of Lyon, Lincoln, Yellow Medicine, Lac Quiparle, Chippewa and Swift; district 11, counties of Kandiyohi, Meeker, Wright and Stearns; district 12, counties of Anoka, Sherburne, Isanti, Benton, Mille Lacs and Kenabec; district 13, counties of Washington and Chisago; district 14, counties of Pine, Carlton, St. Louis, Lake and Cook; district 15, counties of Todd, Morrison, Wadena, Hubbard, Cass, Crow Wing, Aitkin and Itasca; district 16, counties of Big Stone, Traverse, Stevens, Pope, Douglas, Grant, Wilkin, Otter Tail, Clay and Becker; district 17, counties of Beltrami, Norman, Polk, Red Lake, Marshall, Roseau and Kittson.

WISCONSIN DIVISION

District 1, county of Milwaukee; district 2, counties of Racine, Kenosha, Walworth and Rock; district 3, counties of Waukesha and Jefferson; district 4, counties of Ozaukee, Washington and Sheboygan; district 5, counties of Dodge, Fond du Lac, Winnebago and Calumet; district 6, counties of Manitowoc, Kewaunee, Door and Brown; district 7, counties of Green Lake, Waushara, Marquette, Outagamie, Waupaca, Portage and Wood; district 8, counties of Adams, Juneau, Sauk, Vernon, Monroe and La Crosse; district 9, counties of Columbia, Dane and Green; district 10, counties of Iowa, Lafayette, Grant, Richland and Crawford; district 11, counties of Clark, Jackson, Trempealeau, Buffalo, Eau Claire, Pierce, Dunn and St. Croix; district 12, counties of Florence, Marinette, Oconto, Shawano, Anglade and Marathon; district 13, counties of Forest, Lincoln, Oneida, Vilas, Price, Iron and Ashland; district 14, counties of Taylor, Chippewa, Sawyer, Bayfield, Douglas, Washburn, Barron, Polk and Burnett.

IOWA DIVISION

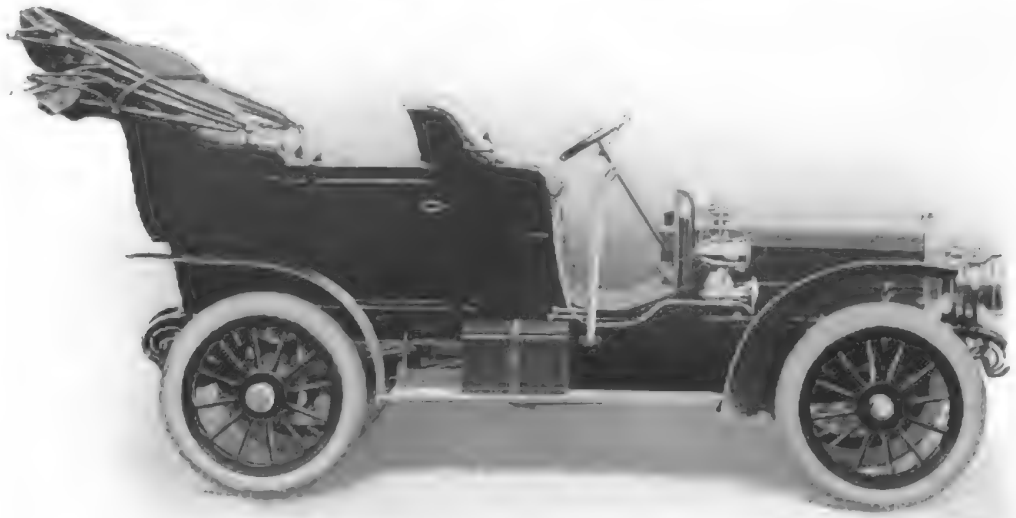
District 1, counties of Allamakee, Clayton, Fayette and Winneshiek; district 2, counties of Dubuque, Jackson, Jones and Delaware; district 3, counties of Clinton, Scott, Muscatine and Cedar; district 4, counties of Louisa, Des Moines, Lee and Henry; district 5, counties of Jefferson, Van Buren, Davis, Wapello, Appanoose and Monroe; district 6, counties of Keokuk, Washington, Johnson, Iowa, Poweshiek, Tama, Benton and Linn; district 7, counties of Bremer, Blackhawk, Grundy, Butler, Franklin and Hardin; district 8, counties of Chickasaw, Howard, Mitchell, Floyd, Cerro Gordo and Worth; district 9, counties of Hancock, Winnebago, Kossuth, Emmet and Palo Alto; district 10, counties of Wright, Hamilton, Humboldt, Webster, Calhoun and Pocahontas; district 11, counties of Marshall, Jasper, Mahaska, Marion, Warren, Pork and Story; district 12, counties of Lucas, Wayne, Clarke, Decatur, Union and Ringgold; district 13, counties of Boone, Dallas, Madison, Adair, Guthrie, Audubon, Greene and Cairo; district 14, counties of Adams, Taylor, Page, Montgomery, Mill and Fremont.

HOW TO BECOME A MEMBER

The American Motor League invites to its ranks all motor car users of good moral character and all persons who favor the use and development of the automobile. The league does everything possible to put forward the safe and sane use of the motor car and aims to secure better roads, the publication of correct road maps, the erection of guide boards and danger signs and to perform other useful works in behalf of automobiling. The dues are nominal—$2 per year. There is no initiation fee. Full particulars will be sent on postal card request. Address F. A. Egan, secretary, New York city.

Digitized by Google

WINTON



Why Ground Parts Reduce Upkeep Expenses

Last week we emphasized the vital importance of GROUND Cylinders and Pistons.

But we can't stop there.

To reduce friction, wear, waste and Expense, **every working part** must be GROUND.

A Ground part has the smoothness of plate glass and is always Absolutely Round.

A part not ground has rough spots and streaks like common window glass and is never perfectly round.

Any bearing not Perfectly Round is a Bad bearing.

Move one unground part against another and the result is excessive friction and wear.

Unground parts in an automobile mean many Repairs, Replacements and Expense Bills. And the friction they create **cannot** be prevented by lubrication. You can flood such bearings with oil, but the Friction and Wear and Waste goes on just the same.

And that friction uses up part of the motor power which should be used in Driving the Car. That's Waste.

Consequently, it costs much more to run an automobile whose parts are not ground.

Also there are more repairs, and you get less mileage.

And when parts are not ground, they are likely to stick and bind, when least expected, and that may mean that you must leave your car out on the road until it can be towed home.

All motor car builders know this.

But those who use soft metal can't grind their parts. Because grains of emery would become imbedded in the metal and cut it (when the engine runs) worse than if not ground.

And cheap cars have no ground parts because grinding costs money and adds to manufacturing expense.

So, when you buy a car with ALL Working Parts GROUND, you are certain that the metal is hard and substantial and that the maker doesn't cheapen his car to save expense in manufacture.

In the new Winton MODEL K **Every** Working Part is GROUND.

Further still, all parts (where experience has shown it to be desirable) are both HARDENED and GROUND.

That means that in buying the Winton MODEL K, you buy greatest mileage, most serviceable machinery, a car whose power is **not wasted**, and one that can be run all the time at the **least possible** EXPENSE PER MILE.

WINTON MODEL K—Four cylinder, vertical, water-cooled; 4¾-in. bore; 5-in. stroke. Individual clutch transmission. Winton Air Governor. Winton Twin Springs. Lubrication, Ignition and Carburization simple and positive. $2500 f. o. b. Cleveland.
"The typical American motor car."—Americanized Encyclopaedia Britannica.

THE WINTON MOTOR CARRIAGE CO.

CLEVELAND, OHIO, U. S. A.

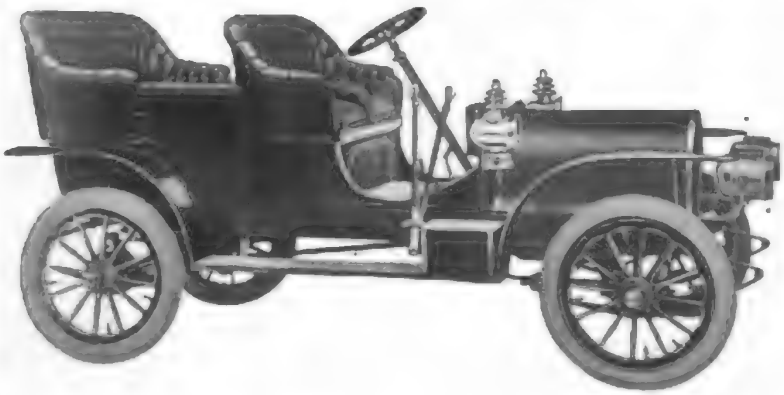
MEMBER A.L.A.M.

Winton Transcontinental Exposition now en route to the Pacific Coast

CATALOG NO. 2 IS READY

Digitized by Google

FRANKLIN



Type G

4-Cylinder Light Touring Car

Air-cooled. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Four or five passengers. Side doors. 88-inch wheel base. 12 "*Franklin horse-power.*" 1400 pounds. 35 miles per hour. Full head and tail-light equipment. $2800, F. O. B. factory.

"What Will It Do?" There's the Whole Question

This car carries its full load 30 to 35 miles an hour regularly on the road under actual conditions.

The intermediate gear is amply powerful for very bad hills.

The car is strong, roomy, comfortable — even luxurious, and extremely economical.

No other car will do so much work on so small an amount of gasoline and oil.

It is of the most perfect construction and made in every part of the highest-grade materials possible to put into a motor car, no matter what the size, rating or price.

It does all that any 20 horse-power car — except a Franklin — will do; and more than most 30 horse-power cars

"Why then, do we not rate it higher?"

Because it is 12 *"Franklin horse-power."* We must be honest with you."

But we must be honest to the car; and we will tell you that *"Franklin horse-power"* means more and does more — *far* more than anywhere near that rating in any other car.

If you forget this fact you are liable to cheat yourself.

Send for the book and you will understand it better. Ride in the car once and you will be certain of it.

4 Models for 1906

Type E. Four-cylinder Runabout or Gentleman's Roadster.
Type G. Four-cylinder Light Touring Car.
Type D. Four-cylinder Touring Car.
Type H. Six-cylinder Touring Car.

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Members A. L. A. M.

"The Motor Car of the Future"

Digitized by Google

MITCHELL CARS FOR 1906

¶The average car that has an ***actual*** (not catalogue rating) twenty horsepower engine, will weigh about 2000 lbs., and most of them lose half of their 20 horsepower in friction before it reaches the rear wheels—this means a delivered to the rear wheels horsepower for every 200 pounds car weight.

¶In a high grade car, conscientiously put together, with bearings carefully fitted, this power loss can be reduced to about 25 per cent. This would now give a horsepower at the rear wheels for every 150 pounds weight.

¶By a new system of design the ***Stevens Duryea*** reduces this power loss to **10** per cent—and by this same system of design the weight is reduced to **1650** pounds. ***Result*** —a rear wheel's horsepower for every 92 pounds car weight.

¶In the first car each horsepower is saddled with a 200-pound burden; in the ***Stevens Duryea*** this burden is lightened to 92 pounds, and you can't find the like in any other car.

¶Now you know why we call the ***Stevens Duryea*** the ***Twentieth Century Hustler.***

J. STEVENS ARMS & TOOL CO.
705 Main St., Chicopee Falls, Mass.

Digitized by Google

ANNOUNCEMENT

The New Model 1906 Rainier

30-35 H. P.

has arrived. Note specifications below, then inspect it and try it. Experts who know Auto-cars from A to Z will be forced to admit that in beauty, workmanship, enduring strength and every other requisite of a perfect touring car, this magnificent new Rainier is THE American Automobile.

Engine—30-35 H.P., 4-cylinder, water-cooled.
Ignition—Sims-Bosch Magneto. Make and break spark.
Transmission—Sliding train, three speeds forward and one reverse.
Rear Axle—Bevel gear drive, clutch driven hub, ball bearings.
Front Axle—I beam section, ball bearings.
Frame—Cold rolled pressed steel, aluminum under-bonnet covering entire engine and transmission.
Wheel Base—104 inches.
Wheels—Imperial whalebone, grade A second growth hickory.
Tires—Continental, 34x4.
Valves—Mechanically operated, inlet and exhaust interchangeable.
Carbureter—Float feed, requiring no adjustment.
Brakes—Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
Body—Full aluminum, double side entrance.
Equipment—Two headlights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000

The 22-28 h. p. will be continued as heretofore without any changes. 4-cylinder, 98-inch wheel base, La Coste coil, French battery, Continental tires, aluminum side door body.

Price, $3,500

Both models guaranteed free of repairs for one year. The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for October and November delivery.

THE RAINIER COMPANY

Broadway, cor. 50th Street NEW YORK

Boston Agents, Morrison-Tyler Motor Co.

Good agents wanted in unassigned territory.

Digitized by Google

TO BE UNCRATED NEXT WEEK

The Announcement of our 1906 Models Will Be Sensational

OLDS MOTOR WORKS
Lansing, Mich., U. S. A.
Member A. L. A. M.

IF YOU CAN'T BELIEVE YOUR EYESIGHT — HOW ABOUT YOUR EARS?

ASK ANY MAN WHOSE CAR IS EQUIPPED WITH

SOLAR

LAMPS

ESPECIALLY IF HE FORMERLY USED SOME OTHER KIND.

HIS ANSWER WILL SEND YOU ON A GALLOP TO THE NEAREST SUPPLY STORE.

THEY ALL SELL **SOLARS**

BADGER BRASS MFG. CO., Kenosha, Wis.

NEW YORK OFFICE, 11 WARREN STREET

Write for Booklet or ask your Supply Man

Digitized by Google

REO 1906
Light Touring Car

16 h. p., 1600 pounds, 90-inch wheel base, 5 passengers, side-door detachable tonneau. Two speeds and reverse. Speed 35 miles per hour. $1250.

REO

This is the car that won three cups in one day in the great Paddock Hill climbing contest; beat its nearest competitor a minute to the mile in the international "Climb to the Clouds" up Mt. Washington; carried 4 people 1050 miles in the famous Glidden Tour at a total cost of $3.10 per passenger—without stoppage or repairs to the motor; and made a perfect score in the Los Angeles Dealers' Association run to Santa Barbara, winning its class and cup among 58 starters and 42 finishers, and tying for first place with a 24-horsepower car costing $2500.

This car has a more graceful body than last year. It is lower in the back, longer, wider and presents a more pleasing appearance.

Burns Gasoline. Not Money.

You want speed, power and style in a motor-car. You are willing to pay what is necessary to obtain them. But no man wants to pay two or three thousand dollars for qualities obtainable for half the money.

Don't Pay It. You Don't Have To.

REO cars have been winning cups all the past season; in speeding, hill-climbing, touring—and every other test of ability and service—from cars costing twice the money to buy; and twice as much to operate and maintain.

Send for the REO book which explains why

REO 1906 Runabout 8 h. p., 1000 pounds, 2 passengers, 26 miles per hour, **$650.**
Convertible into a 4-passenger car by means of a folding seat to carry two extra passengers facing forward. $675.

Has the same simple, compact, long-stroke engine as the Touring-car; the same style of radiator, carbureter, transmission, and high-grade construction and finish.

REO Motor Car Co.

Sales Department, Lansing, Mich.
R. E. OLDS, Pres. R. M. OWEN, Sales Mgr.

Agencies throughout the United States

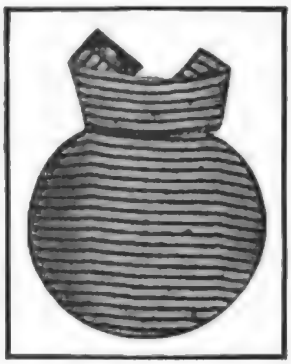
WAY'S MUFFLER

A Sure Guarantee Against Colds

Especially adapted for Fall and Winter Automobiling

A Perfect Throat and Chest Protector

For Men, Women and Children



EASY TO PUT ON AS YOUR HAT

Made with or without ear-tabs

¶ Way's Muffler is an Ideal Garment for Automobilists.

¶ Sold by dealers everywhere. If your dealer cannot supply you, write direct to

The WAY MUFFLER CO.

MANUFACTURERS

J. HOWARD WAY, Prop.

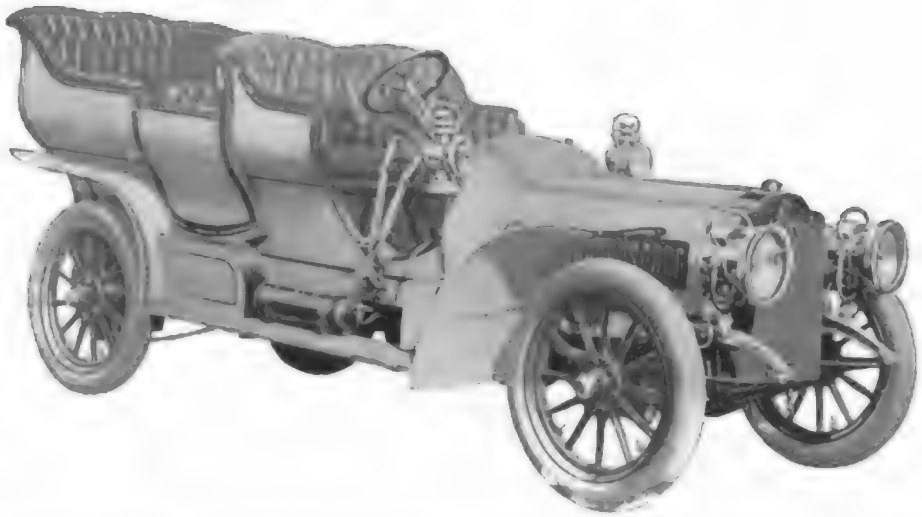
Cor. 23d and Arch Streets

PHILADELPHIA, PA.

Digitized by Google

THOMAS

1906



In spite of the fact that we are completing the finest fire-proof factory in the world with a capacity of one thousand high powered automobiles per annum, it looks very much as though last year's scramble for Thomas Cars was going to be repeated.

Last year, premiums of all the way from $150 to $750 were refused for Thomas cars. We were likewise compelled to refuse orders for 50 per cent of our capacity.

The only sales we lost were those of a few unposted persons here and there, who couldn't see how so much value could be sold at so reasonable a price.

That idea was demolished last season and the fact that the 1906 Thomas is far costlier than the 1905 model without a change in price makes it unquestionably the greatest automobile value in the world today.

In brief what you have to consider is a car which demonstrated last year its superiority to cars costing from $1,500 to $4,000 more money.

A car with 50 H. P. (actual) which is quieter than it was last year; smoother than it was last year; has larger motors; is far more beautiful; far more comfortable, seating five or eight all fronting forward; with perfect clutch; perfect control; four-speed Hess-Bright Ball bearing transmission; four powerful brakes; forgings throughout; material guaranteed to be the costliest made; fifteen Hess Bright Bearings and one roller.

Analyzing this 1906 offering of power, beauty and the highest degree of construction, and bearing in mind what I have said to you about the probability of a greater demand than we can supply even with our increased capacity of 1,000 high powered automobiles per annum—do you not think it advisable for you to investigate the Thomas without delay by consulting our nearest representative?

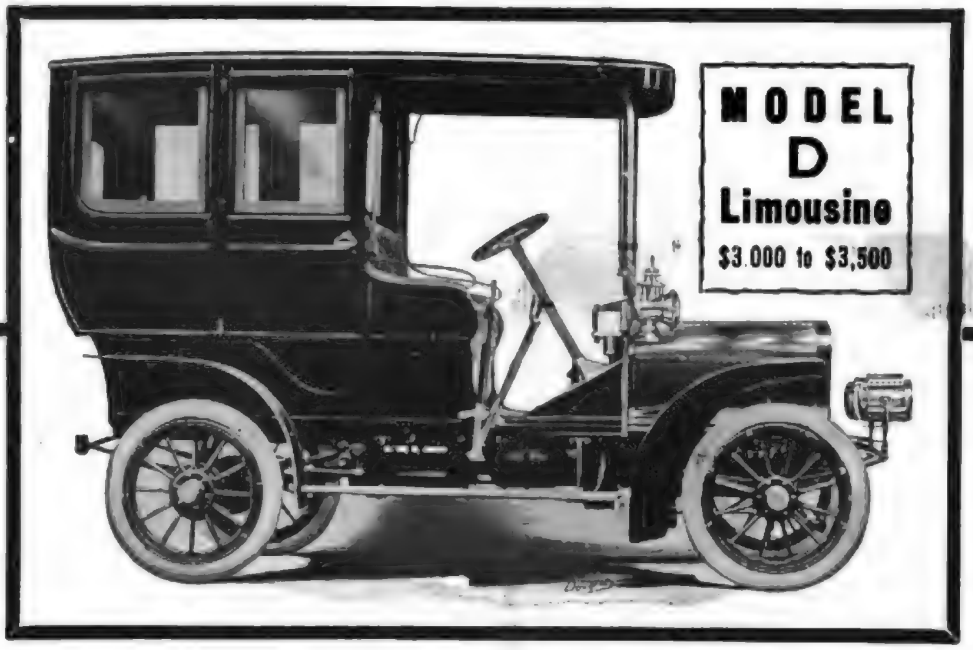
E. R. THOMAS,

For the E. R. Thomas Co.

E. R. THOMAS MOTOR COMPANY

1417 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google



CORBIN

AIR-COOLED CARS

AIR-COOLING, highly desirable at all seasons, is especially advantageous when applied to cars for winter driving

SILENT AS THE PURRING OF A KITTEN

Our Catalogue tells the story of Air Cooling in particular and of Corbin Cars in general. Sent on request.

Corbin Motor Vehicle Corporation

NEW BRITAIN, CONN.

NEW YORK, 4 West Thirty-Eighth St.
BOSTON, 43 Columbus Avenue
PHILADELPHIA, 629 North Broad St.
CHICAGO, 1404-6 Michigan Avenue

POPE AUTOMOBILES

MORE POWER, MORE SPEED, MORE ROOM, MORE STYLE, MORE STRENGTH, LESS WEIGHT

The double, outside chain drive makes the car run

As Light as a Feather

The Pope-Toledo, Type XII, 35-40 H. P., is the product of our many years of varied and valued experience in the construction of gasoline touring cars.

The Efficiency of the Motor is not secured by mere excess of bore and stroke in the cylinders, but the entire mechanical construction, including material and finish, has been so studied that we get one horsepower for every 10 8-10 lbs. of weight and this, too, without in any degree sacrificing strength, the margin of safety in all parts being as great as heretofore.

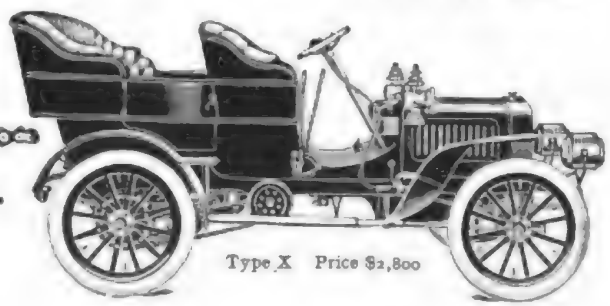
This is not the conclusion of a philosophical problem reasoned out by a keen, mental activity, but it is an actual result achieved by mechanical skill and proved under extraordinary tests over highways and country roads.

Send for a detailed description of this wonderful car and it will convince you of all we claim. Order now for early delivery.

Price $3,500

In the meantime, we have for **immediate delivery** our new Type X, 20 h. p., touring car fresh from the factory. A light, wieldy car, combining efficiency, comfort, style and durability.

Price $2,800



Type X Price $2,800

Pope Motor Car Co.
TOLEDO, OHIO
A. L. A. M.

Digitized by Google

WE HAVE IT

TREBERT

THE ONLY TRUE SALT SUBSTITUTE

Contains Vitamin B1

Recommended by Physicians

Sold by Druggists

TREBERT CHEMICAL COMPANY

Chicago, Illinois

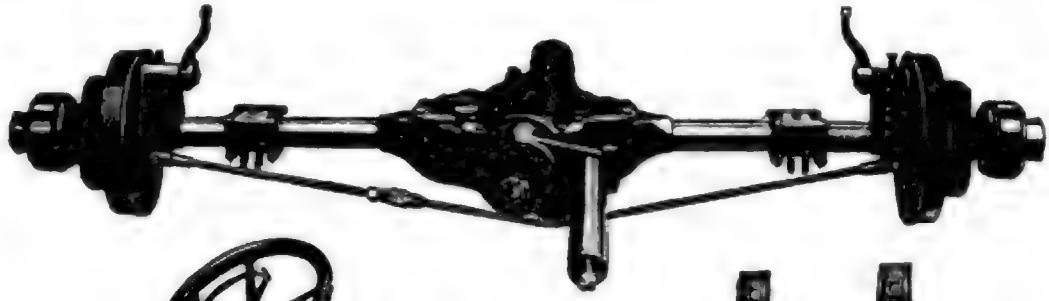
GARFORD TOURING CAR PARTS

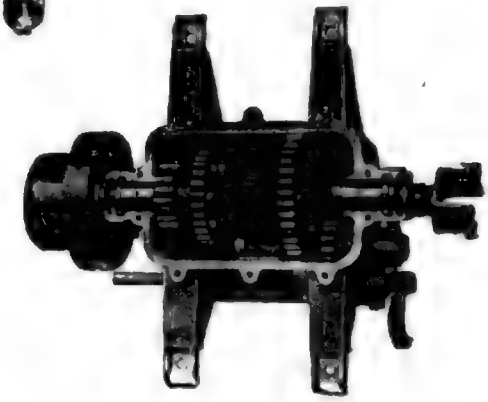
We don't wait for customers to test our parts before ascertaining if they are suitable for high grade touring cars. The model cars our engineers operate are given such severe service that the dependability of each piece is known to us in advance. Experiments are conducted at our own expense and risk. *Write for Circular No. 12.*

One size for cars weighing up to 2,400 lbs., and of 30 H. P. Other size for cars weighing up to 2,800 lbs., and of 50 H. P.

The Garford Company—Elyria, Ohio

SALES MANAGER—HAYDEN EAMES, AMERICAN TRUST BUILDING, CLEVELAND



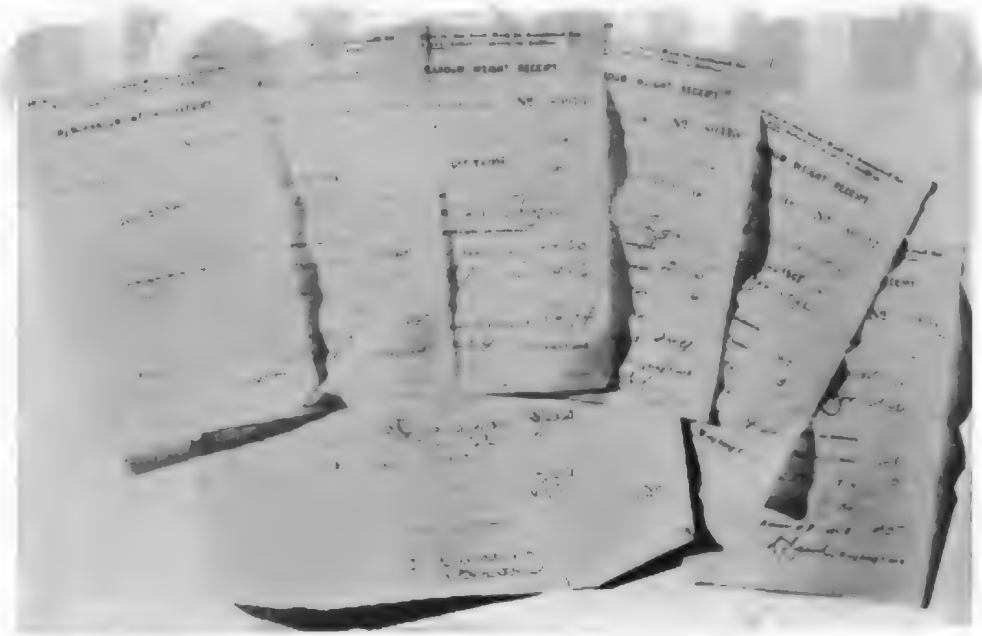


GARFORD PARTS

REAR AXLE, Ball or Plain Bearing
FRONT AXLE, Ball or Plain Bearing
CHANGE GEAR
STEERING GEAR
CLUTCH
PROPELLER SHAFT
DISTANCE ROD and Bracket
LEVERS for Emergency Brake and Change Gear

Digitized by Google

Motor Age Circulation



The above cut represents Post Office Receipts for 7,130 pounds net, of issue of October 19, 1905.
Each paper, including wrapper, weighed an average of 10 ounces.

7,130 pounds divided by 10 ounces equals	11,408	papers
We also sold, **non-returnable**, to Western News Co. and news stands direct	674	"
Mailed under stamps to foreign addresses	90	"
Retained for office sales and distribution	350	"
Total for week of October 19	12,522	"

STATEMENTS PREVIOUSLY PUBLISHED.

Average weekly edition for July, 11,755—see page 38, August 24 issue.

August 17, page 42, statement for August 3	13,159	papers
August 24, page 39, statement for August 10	12,269	"
August 31, page 38, statement for August 17	12,176	"
September 7, page 29, statement for August 24	12,271	"
September 14, page 42, statement for August 31	12,518	"
Average weekly edition for August, 12,468.	62,393	"
September 21, page 32, statement for September 7	12,220	papers
September 28, page 46, statement for September 14	13,106	"
October 5, page 46, statement for September 21	12,283	"
October 12, page 52, statement for September 28	12,532	"
Average weekly edition for September issues, 12,535.	50,141	"
October 19, page 50, statement for October 5	12,239	papers
October 26, page 44, statement for October 12	12,868	"
Including above for October 19	12,522	"
Average for three issues in October, 12,543.	37,629	"

MOTOR AGE, *N. H. VanSicklen*
Manager.

Digitized by Google

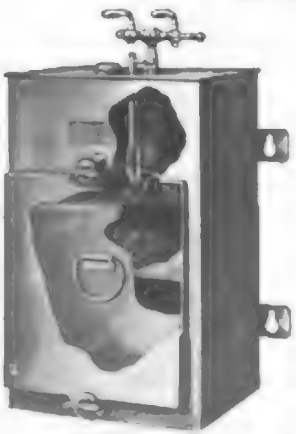
1906 ATWOOD LAMPS & GENERATORS

Front View

NEW GAS HEADLIGHT

Side View

NEW GAS HEADLIGHT



Patent applied for

THE FAMOUS ATWOOD GENERATOR

TO THE TRADE

Thirty years of experience as builders of Good Lamps has enabled us to present our 1906 Line with the absolute knowledge that they are IN EVERY DETAIL THE MOST PERFECT EVER PRODUCED.

They cost a trifle more than others, but they are SURELY worth the difference. Our reputation is behind them, and that means

HIGHEST GRADE

Design patent applied for

NEW OIL SIDE LIGHT

Manufacturers should BY ALL MEANS see our line before contracting for 1906. SURE.

ATWOOD MFG. CO.

WRITE US

AMESBURY, MASS.

Digitized by Google

MOTOR CAR TIRES

The Most Serviceable Tires Made

No Internal Heating. The thread fabric construction makes the tire so pliable that it changes position in service with the least possible resistance, which means that the tires are very resilient, fast and free from internal heating.

No Pinched Tubes. The tire is fitted with a flap, which prevents the tube from coming in contact with the rim, or from getting under the edges of the case, preventing pinched tubes.

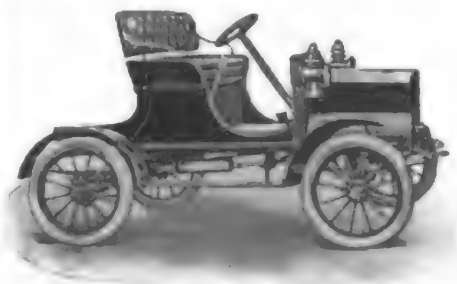
No Creeping. The flap forms a strong frictional contact with the edges of the clinches, holding the edges firmly to the rim for its entire circumference, so that it is impossible for the tire to creep.

G&J TIRE CO.

Boston Buffalo Cleveland Detroit INDIANAPOLIS Chicago Denver San Francisco

Just a Few Details

of our Models G and H which we could not mention in our announcement in Motor Age October 19 and 26: First a word about 2 cycle motors. In this construction all valves, cams, cam shafts and all gearings are entirely omitted as compared with 4 cycle motors. 75 per cent less working parts, 75 per cent **less** trouble. Our motor is as quiet as is possible to make a gasoline car. Both models, G and H, have 2 cycle, 2 cylinder vertical motors under hood in front. Beautiful body design, materials all of the very best, planetary transmission. **One lever controls all speeds and brake.** Model G lists at $650, Model H lists at $750.



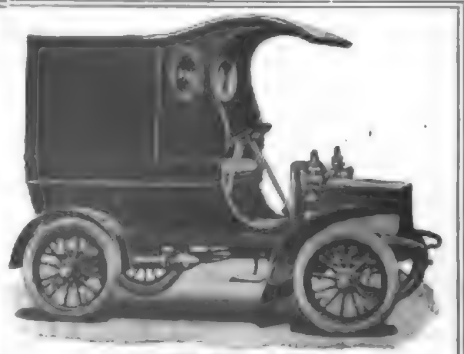
Model "G" 10 h.p. Runabout

NOTICE

We Want Agents in Every Locality

Agents who will hustle. Our line a quick seller and will remain sold. Fewer parts, fewer repairs, fully equipped.

ADDRESS
DEPT. "C"



Model "H" 10 h.p. Delivery.

Wolverine Automobile & Commercial Vehicle Co.

DUNDEE ... ... MICHIGAN

Digitized by Google

CADILLAC CONFIDENCE

During October we have booked orders from dealers for just 1210 Cadillacs for 1906 delivery—Only a starter.

Every one of these dealers has ordered at least as many cars as he had in 1905, in some cases twice the quantity. But not one of them has even seen a sample of the cars he's bought.

Taking chances?

Not a bit. They know that Cadillacs have always been right and as the Cadillac Company has never led them astray, they have confidence that they will continue to be right. No freaks, no experiments to be tried on the public—just Cadillacs.

They know that Cadillacs are the kind that give satisfaction, the kind that sell and stay sold and don't worry them to death afterward. They know too, that most buyers know it and that the others are learning it fast.

We're taking 1906 business.

CADILLAC MOTOR CAR CO., *Member Association Licensed Automobile Manufacturers.* **DETROIT, MICH.**

Michelin

Tires of the highest class.

The only stock tires that rode to victory in the Vanderbilt race without a change.

MICHELIN ROUND TREAD TIRES.
MICHELIN FLAT TREAD TIRES.
MICHELIN ANTI-SKID TIRES.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET
NEW YORK

E. D. WINANS, Gen'l Mgr

Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

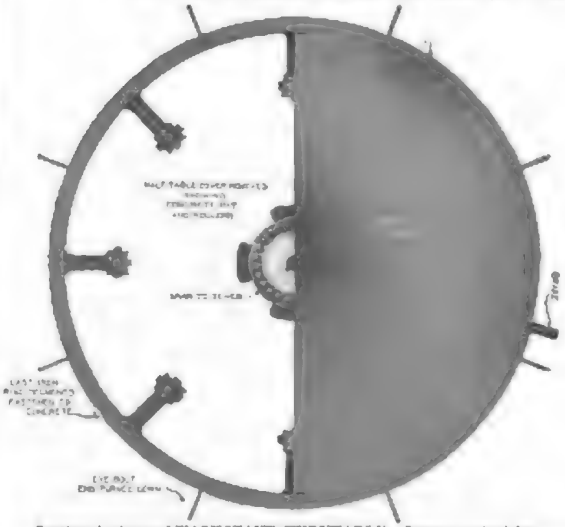
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

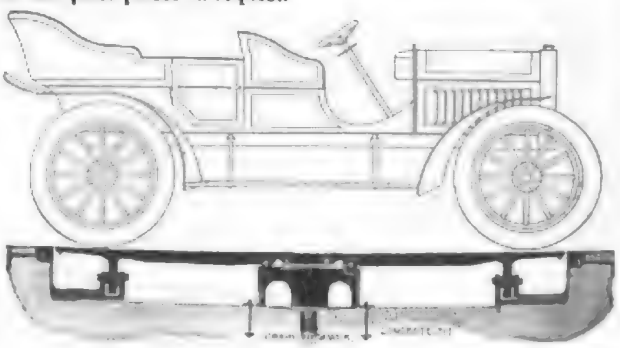
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

KINGSTON 1906 TYPE-K- AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,

KOKOMO, INDIANA, U. S. A.

Digitized by Google

Are YOU a Ford Agent for 1906?

If not, get the Agency for your territory. It will be worth your while. We do not care to announce particulars about our new models at this early date. There's enough people copying Ford ideas and we want Ford Agents to have an exclusive snap next season.

We can promise you, however, that the Ford proposition for next year will be the biggest money and reputation maker ever offered to an Automobile Agent.

You have heard the rumors about a "Ford runabout," but the most glowing accounts of our car will fall far short of the actual car we have for next year.

Write and get in touch with us.

FORD MOTOR COMPANY :: Detroit, Michigan

Members American Motor Car Manufacturers' Association, Chicago.

Canadian Trade supplied by THE FORD MOTOR CO. OF CANADA, Ltd., Walkerville, Ont.

The Daimler Manufacturing Co.

announces that it is now ready to book orders for the

1906 American Mercedes 40-45 H. P.

PRICE $7,500 PRICE $7,500

Through our sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company — THE DAIMLER MOTOREN GESSELSCHAFT, of Unterturkheim, near Canstatt, Germany, we produce **the only authorized copy, part for part, of the**

1906 Mercedes

AUTOMOBILE

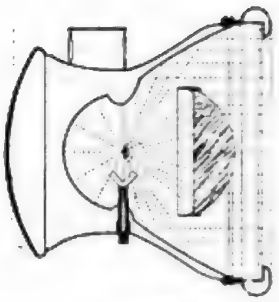
All the shop drawings of the 1906 Mercedes, showing the latest changes and advances embodied in this celebrated car, are now in our hands, awaiting your examination. Will mail you the 1906 catalogue on request.

SAVE THE DUTY

DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, LONG ISLAND CITY, N. Y.
NEW YORK CITY GARAGE, 10 West 60th Street

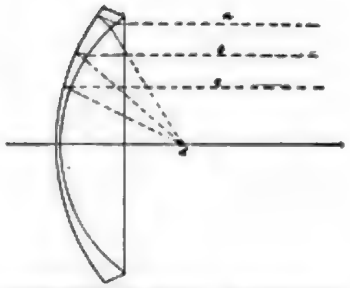
Digitized by Google



THE RELIC

A Re-Invented Relic

Theoretical Efficiency 80 per cent.	Theoretical Efficiency 50 per cent.
Actual Efficiency 10 per cent.	Actual Efficiency 40 per cent.



RUSHMORE NAVY STANDARD

NO The left hand view does not show the latest parabola-lens from Paris nor the latest American imitation of it, though it looks remarkably like them. : : : : : : : : : : :

It shows a searchlight patented eighteen years ago, made by us for many years and discarded ten years ago because of its ridiculously low efficiency compared with the Navy Standard Mangin Mirror, which was first perfected by us.

Theoretically, the "Relic" utilizes nearly every ray from the source of light. Practically, most of the rays are absorbed by the sheet copper, silver plated reflector and by the ridiculously heavy bull's-eye lens. The reflectors in the presence of burning acetylene cannot be kept bright, or even clean. Their efficiency, with the most careful hand burnishing, is never more than 50 per cent., and it drops in a few days to but 5 or 10 per cent.

We found by actual test that the carrying power of the Navy Standard Light with our short focus mirror, made only in our works, was ten times that of the "Relic," and we dropped the "Relic." That was ten years ago.

The Rushmore Mirror cannot tarnish. Its efficiency is the highest of any. When you compare "lamps" compare them as we did—in the dark—and see that the flames are the same size.

RUSHMORE DYNAMO WORKS PLAINFIELD, NEW JERSEY

PENNSYLVANIA CLINCHER

There are no perfect Motor Cars, nor any perfect tires—as yet;

But if you have a car which you consider almost perfect, perhaps you would like a tire fit to associate with it.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

THE HARTFORD DUNLOP TIRE

OFFICE OF
DR. J. B. BOUCHER.
30 CHARTER OAK AVE.,
TELEPHONE CALL 7004.

Hartford, Conn. Oct. 23, 1906.

The Hartford Rubber Works Company,

Hartford, Conn.

Gentlemen:-

You may be interested to learn that the Hartford Dunlop tires fitted to my two cylinder Knox which I have driven all season, have thus far covered a little over 3500 miles. I have had no trouble with the exception of four punctures. I am much pleased with the tires both as to their wearing qualities and the ease with which they can be removed and replaced.

I do not enjoy punctures but must admit that they are robbed of half their horror since using the Dunlop.

Very respectfully yours,

J. B. Boucher M.D.

THE
Hartford Rubber Works Company

Home Office and Factories Nos. 1 and 2,
HARTFORD, CONN.
Factory No. 3, New Brunswick, N. J.

BRANCHES:
BOSTON, 402 Atlantic Ave.
NEW YORK, 88 Chambers St.
NEW YORK, 1750 Broadway.
NEW YORK, 2155 Jerome Ave.
PHILADELPHIA, 138 N. Tenth St.
BUFFALO, 686 Main St.
SAN FRANCISCO, 471 Mission St.
CLEVELAND, 77 Bank St.
DETROIT, 256 Jefferson Ave.
CHICAGO, 83 Michigan Ave.
DENVER, 1564 Broadway.
LOS ANGELES, 116 East Ninth St.

Compound MOTOR CARS

1906 MODELS Now Ready for Demonstration

All Valves Interchangeable.

Positive Lubrication by Mechanical Force Feed Oiler.

Hand Forged Crank Shaft ground to size.

12-15 H. P. Compound Motor.

Aluminum Body.

Sliding Gear Transmission, Three Speeds Forward and Reverse.

Can be furnished with either Shaft or Double Chain Drive.

EQUIPPED WITH TOP AND HEADLIGHTS, $1550

We should be pleased to refer anyone to many satisfied customers who are daily using Compounds
Testimonials will appear from time to time in future advertisements

THE E. H. V. CO. : : Middletown, Conn.

Digitized by Google

There is no greater disappointment than to operate a first-class automobile and have it act second or third grade because of its tire equipment.

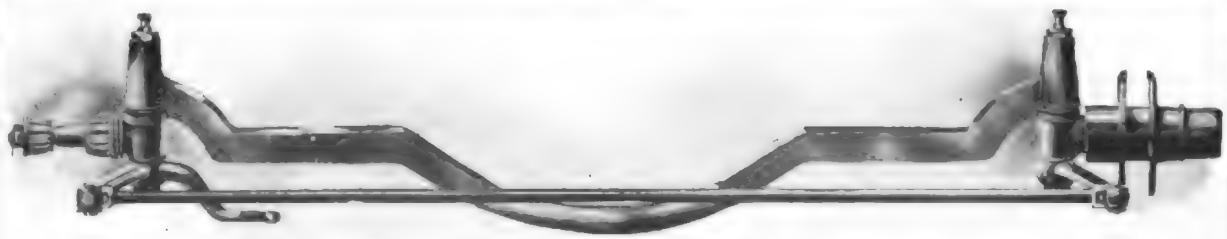
Continental Tires

continue to maintain in first-class condition any car they are equipped to. RESULTS prove that. Send for proof.

DEPARTMENT M. A.

THE CONTINENTAL CAOUTCHOUC CO.,

EMIL GROSSMAN, Gen'l Mgr. (FACTORY, HANOVER, GERMANY) 43 Warren St., NEW YORK



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

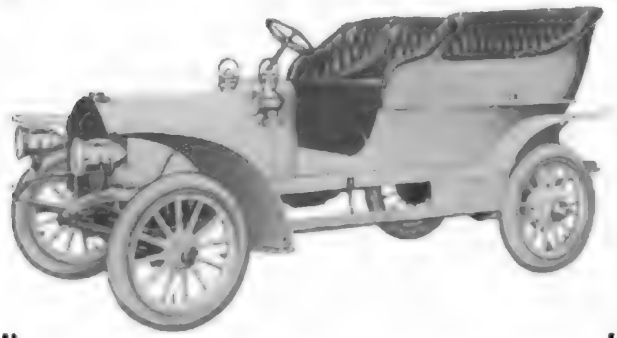
Stoddard - Dayton

Continued tests of **strength, power** and **speed** permit of our claiming the new 1906

Model D

Stoddard-Dayton

a wonder of automobile construction.



An open inspection of our factories shows the **best grades of material,** from steel to upholstering tacks.
In our assembling room is shown the **greatest care.**
The finished product substantiates it all.

BOOKLET READY—CATALOGUE LATER

CHICAGO: McDuffee Auto Co.
NEW YORK: Stoddard-Dayton Agency, 60th and Broadway
BOSTON: Randliff Motor Car Co.
MINNEAPOLIS: Haynes Auto Co.
INDIANAPOLIS: Frank L. Moore

Dayton Motor Car Co.

FACTORIES

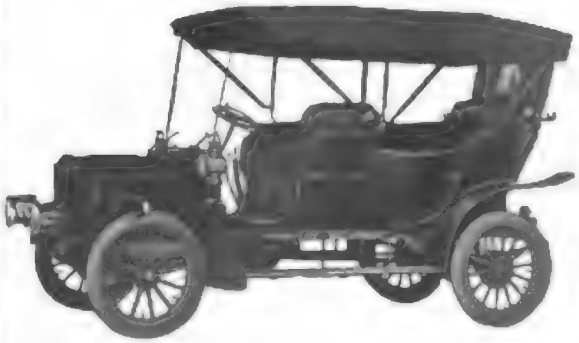
DAYTON, OHIO

Stoddard - Dayton

THE INCOMPARABLE

WHITE

THE CAR FOR SERVICE



MODEL "F" SIDE-ENTRANCE WHITE

This is the sixth model of the incomparable White steam car to be offered to the public. In our judgment, and in that of the many automobilists who have seen the car, the Model "F" leaves nothing to be desired.

There is something more than the luxurious appearance of the car, its speed and noiselessness of running, to influence your judgment in favor of our car. That "something more" is the uniform and unbroken success of White cars in all reliability and endurance contests, starting in 1901, and an unequaled record of accomplishments by a host of private owners.

WRITE FOR LITERATURE

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

The Standard American Cooler

THE WHITLOCK COOLER

Was used on the *Locomobile Racer that finished third in the Vanderbilt Cup Race.* It was never touched during the race. *It did its full* duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

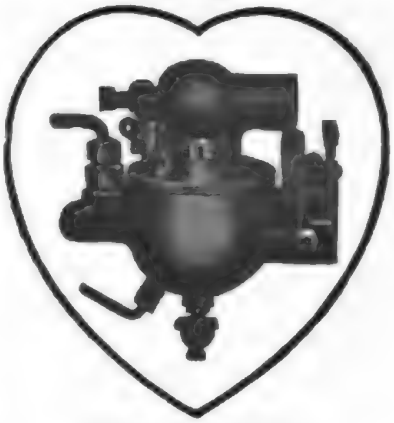
The Whitlock Coolers

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

Hartford ... Conn.

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ½" to 3".
Schebler carbureter with balance throttle to be used with a governor.
Schebler two-cycle engine carbureters.
Schebler Special for Cadillacs.
Oldsmobile carbureters.
Ford two-cylinder carbureters.
Autocar Runabout carbureters.
Franklin Automobile carbureters.
Standard sizes for all other motors.
Special fittings for attaching the Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

LIST OF AGENCIES.

P. J. Dasey.....431 Wabash Ave., Chicago, Ill. Factory Rep.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, Rhode Island
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Elec. Supply Co.....Washington, D. C.
Automobile Equipment Co.....Detroit, Mich.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station....3425 N. Broad St., Phila., Pa.
Auto Supply Agency.....3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co.....New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chansior & Lyon Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Neil & Co.....38 Fenchurch St., London, England.

Digitized by Google

Congratulations

From a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, *the latter seems to be a sure thing on some tires that we know of.*

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—*Ashville Cycle and Auto Company, Sept. 23, 1905.*

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1625 Broadway
Buffalo, 731 Main St. — Cleveland, 420 Superior St.
San Francisco, 309 Mission St. — Chicago, 141 Lake St.
Boston, 161 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

The Haynes Won Honors

A regular "Haynes" stock touring car outclassed the especially constructed racing monsters, in the Vanderbilt Cup Elimination Trials securing a position that entitled it to a place on the American team.

A random comparison of the cylinder capacity of the competing cars with **THE HAYNES** (5 inch bore x 6 inch stroke) is sufficient to demonstrate what a wonderful achievement this was.

EXACT DUPLICATES

of the car that outclassed and outdistanced powerful racing monsters are offered for 1906.

LIVE AGENTS

are quick to realize the advantage of handling a car like this. Get your application in early.

We are Booking Orders in Their Turn for This Car.

The Haynes Automobile Company

Members A. L. A. M.

KOKOMO, - IND.

New York — Chicago

Digitized by Google

A RANGY LINE

1906

JACKSONS

THREE MODELS
"C," "D" AND "G"

RANGE OF PRICES
$1250, $1500, $2500

RANGE OF POWER
FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE
90" ═══ 100" ═══ 108"

Plenty of Style, Strength and Speed

MODEL C
2 cylinders opposed, 5¼"x5", motor under body, wheel base, 90 inches; chain drive.
Price, $1250

MODEL D
A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.
Price, $1500

MODEL G
40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.
Price, $2500

LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

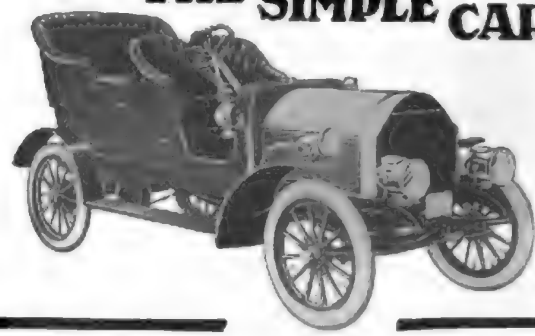
A Live Line For Live Dealers : : : : : WRITE

JACKSON AUTOMOBILE CO.
JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

National
Motor Cars

In two new models improved and better than ever will be ready very shortly.

We have a surprise to offer which will make EVERYBODY

"Watch for the Round Radiator"

National Motor Vehicle Co.
1006 East 22d Street
INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.

Digitized by Google

A SPLENDID

DOCTOR'S CAR

THE ADAMS-FARWELL MOTOR CAR

Three Cylinder Gasoline Motor :: Revolving :: Air-Cooled

Operated from rear seat or from folding front seat.
All windows may be lowered, making an open car.

NO WATER. NO RADIATOR. NO FLYWHEEL. NO MUFFLER.
AUTOMATICALLY GOVERNED. NO FAN.

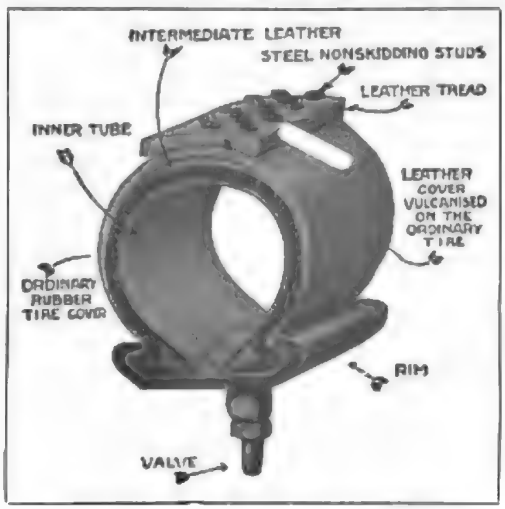
Cylinders 5 in. Bore. Displacement 265 cu. in. 20-25 Horse Power.

$2,500

Chicago Salesroom: 1536 Michigan Ave.

THE ADAMS COMPANY DUBUQUE, IOWA, U. S. A.

SAMSON
LEATHER TIRE
NON-SKIDDING :: :: PUNCTURE PROOF



A. E. GALLIEN, Manager

UNITED STATES BRANCHES:

New York: 12 West 33d Street Chicago: 1461 Michigan Boulevard
Boston: 20 Park Square Philadelphia: 1120 Chestnut Street

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

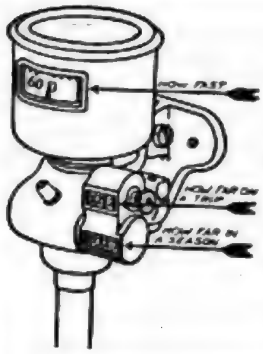
THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

REGARDING 1906 BUSINESS

As truthful a saying as ever was heard
Refers to a worm and an early bird;
And especially true is this of the sage,
Who uses space now in the MOTOR AGE.

Digitized by Google



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1891 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN Runabouts
OLDS TOURING CARS
CADILLAC
FORD
THOMAS Models 17 and 18
GENERAL
YALE
AUTOCAR

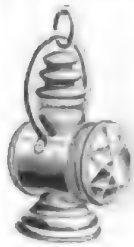
WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

Latest European Novelties

RACING CAR No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.



No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber,
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

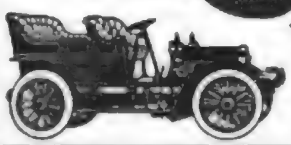
PETERSON & DRAPER, 166 Lake St., Chicago, Ill.
THOS. J. WETZEL, 11 Warren St., New York. } Factory Salesmen.
CHAS. E. MILLER, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202 & Columbus Ave., Boston.
406 Erie St., Cleveland, O. } Sales Agent Carrying Stock.
POST & LESTER CO., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

200 South Geddes Street **SYRACUSE, N. Y.**

Digitized by Google

Locomobile



The *Locomobile* Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St. BOSTON, 15 Berkeley St.
PHILADELPHIA, 249 N. Broad St. CHICAGO, 1354 Michigan Ave.

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

Keeps Your Car Bright

Keeps Your Car Clean

Makes Old Cars Look Like New

HOFFHEIMER SOAP CO.

CHICAGO

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 20:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil.

Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.

Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

HAVE YOU SEEN THE NEW

KOKOMO

MECHANICALLY - ATTACHE

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,

KOKOMO, IND.

Digitized by Google

Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building in WILKES-BARRÉ, PA. will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then MATHESON MOTOR CAR CO. Holyoke, Mass.

A TIMELY WORD TO
DEALERS

THE Model A GALE $500

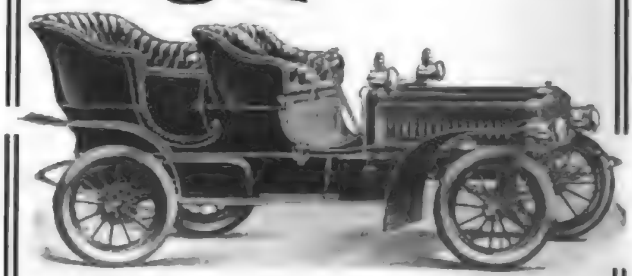
Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.

THE LAMBERT



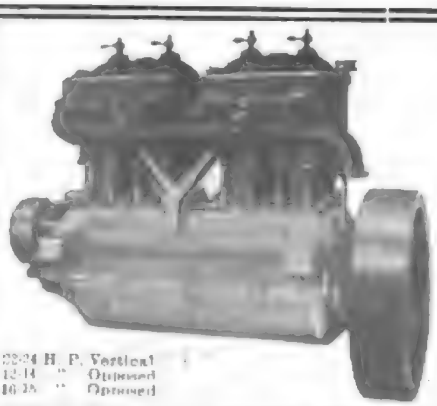
Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.
MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION CHICAGO



22-24 H. P. Vertical
32-34 " Opposed
46-48 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR
BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

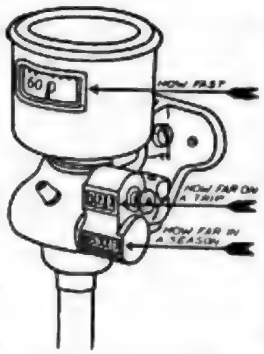
BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

THE AUTO-METER "BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy



The **Speed Dial**, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The **Trip Dial** records the distance traveled on a trip or for a day.
The **Season Dial** records the total distance covered in a season.
There is satisfaction in knowing how fast your car is travelling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

DIETZ

THE **DIETZ** OIL LAMPS

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York
ESTABLISHED 1840

DANGER AHEAD!

A Good, Steady Light

Is your best safeguard at night. The only way to be sure of it is to use the

PREST-O-LITE GAS TANK

Supplies any number of lamps with a perfectly reliable run of pure, cool gas. Never leaks or gets out of order. No trouble, no time lost in waiting. No repairs necessary.

Chicago, Ill., July 27, 1905.

The Automobile Supply Co.,
Chicago, Ill.

Dear Sirs:
Replying to yours of the 24th, I am pleased to state that I have used the Prest-O-Lite gas tank since Jan. 1, 1905, with perfect satisfaction. I like the Prest-O-Lite for several reasons: It is clean; it is always ready; it is odorless; it gives a good steady light and is just as handy as the gas in your house. As to the expense as compared to the old carbide generator, will say that the tank is a little more expensive, but its advantages over the old carbide generator are so many that it more than makes up for the difference in expense.

Yours very truly, N. M. PERCY.

To be had of all dealers. Empty tank exchanged for full one by any dealer.

PREST-O-LITE COMPANY
INDIANAPOLIS
AGENTS IN ALL CITIES

Price Complete $35

Exclusive Licensees under patents of the Commercial Acetylene Co.

TANK RECHARGED AT SMALL EXPENSE BY ANY DEALER

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE
With All Goods Bearing This
TRADE MARK

TRADE KOKUK MARK
REGISTERED

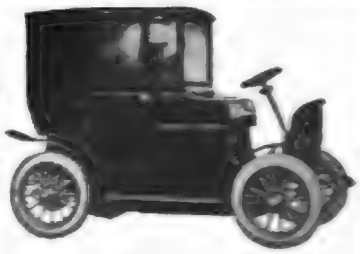
MANUFACTURED EXCLUSIVELY BY
F. S. CARR
74 Pearl Street, BOSTON, MASS.

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham: Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY

Members Association Licensed Automobile Manufacturers

Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington R. & T. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 25th North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

Pressed Steel Frames

AND STANDARD PARTS

Automobile Manufacturers using our pressed steel frames on their machines are always certain that they have the best of frames procurable in point of reliability. We have recently increased our capacity and are equipped to turn out our standard frames, or frames of special design, in quantities for early delivery. We have presses also for making heaving stampings and pressings of all descriptions and are prepared to do any work in this line. We also make a complete line of

Rear Axles, Front Axles, Clutches, Change-Gears, Propeller Shafts, Steering Columns, Hubs and Other Automobile Parts

A. O. SMITH COMPANY

MILWAUKEE, WISCONSIN

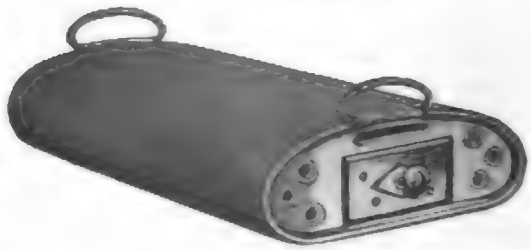
Hayden Eames, Sales Manager, American Trust Bldg. Cleveland, O.

Keep Your Feet Warm

When riding or driving in your Auto use a

LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

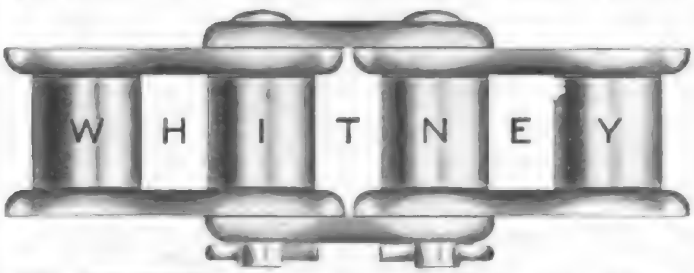


300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the **standard and best.** They burn **LEHMAN COAL** at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the BEST money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

LEHMAN BROS., Mfrs., 10 Bond St., New York

J. W. ERRINGER, Gen. West. Sales Agt.
45 East Congress St., Chicago, Ill.

1906 Model "WHITNEY" Detachable Roller Chain—Patented



THE WHITNEY MFG. CO., Hartford, Conn.

Investigate "Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the leading American Automobile Manufacturers and have been recognized by other chain manufacturers at home and abroad. This matter of standards is certainly one of importance, and at some future date six sizes of chains for automobiles can perfectly take the place of over thirty sizes used in the past.

Our 1906 Models embody a number of improvements and they are breaking all previous records for quiet running and efficiency.

Digitized by Google

Front wheel and opposite rear wheel each raised over a foot.

Twist the car this way

When you inspect the car you think of buying, have the wheels raised in this same way. If the car doesn't meet the test as gracefully, without evidence of great strain, how much worse will it fare on rough roads with the speed up?

THE MARMON

"A Mechanical Masterpiece"

Is the **only** car that not only "goes everywhere," but goes there with such freedom from jar, jolt or vibration, that it possesses a very luxury of motion. It is the only car that can be run at good speed over rough roads without ruinous strain and undue friction on all parts.

Because it is the only car embodying the patented feature,

Double Three Point Suspension

Cast aluminum body on one frame, power plant on another frame, **each frame** suspended on three **pivotal** points. Eliminates the binding, twisting strains inevitable in the rigid suspension of all other cars. Perfect alignment and efficient power transmission under all conditions. Four cylinders; air-cooled.

To any one who is prepared to buy a car that is carefully constructed and really luxurious, the Marmon speaks for itself. *Write for Booklet No. 1.*

NORDYKE & MARMON COMPANY, Indianapolis, Ind.
(Established 1851) *Members American Motor Car Mnfrs. Association*

Northern

"Noiseless and Dustless"

7 h. p. Runabout	$ 650
18 h. p. Side Entrance Touring Car	1,700
Limousine	2,500

Investigate our claim for QUIETNESS—you will find that the Silent Northern surpasses in this respect. It is QUIETER than the finest electric.

Investigate our claim for EASY RIDING—four full elliptic springs and scientific distribution of weight which includes placing of all mechanism under the front hood, insure a freedom from vibration such as you can have no conception of until you ride in a Silent Northern.

There are other features embracing our THREE POINT MOTOR support and encased mechanism which reduce the cost of maintenance to the minimum. Send for our complete Catalogue 14 which explains in detail.)

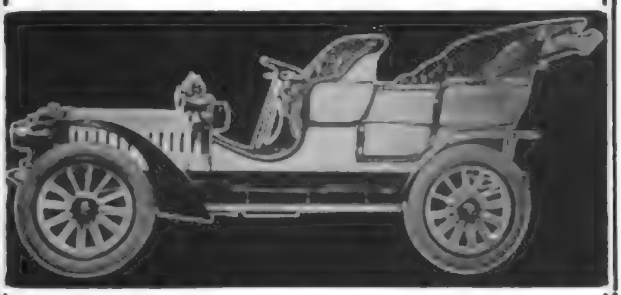
NORTHERN MFG. CO.
DETROIT, U. S. A.

Members Association Licensed Automobile Manufacturers.

Peter Fogarty, 141 W. 38th St., New York City Agent.

AUSTIN

A LUXURIOUS CAR



THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.

GRAND RAPIDS, :: MICHIGAN

FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.

107 West Monroe St. :: Chicago, Ill.

Digitized by Google

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

Moline for 1906

MODEL "A"—30-35 Horse Power —$2,500.

MODEL "C"—18-20 Horse Power $1,750.

Both the above have four cylinder vertical motor; three speed sliding gear transmission; pressed steel frame; mechanical oiler, and double side entrance body.

MODEL "G"—16 Horse Power—$1,000.

Double opposed motor, chain drive, mechanical oiler, and double side entrance detachable tonneau body.

...FULL PARTICULARS FURNISHED ON REQUEST...

Moline Automobile Company
EAST MOLINE, ILL.

Why Premier Cars

Appeal to All Classes

To the Professional Man—because of its simplicity.

To the Business Man—because of its readiness to go at all times.

To the Repair Man—because of its perfect accessibility to working parts.

To All Men—because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5,000 recorded miles—is only a trifle over one cent per mile for the car, or 1-5 to ¼ cents per mile per passenger; total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

The Air Cooled Season never ends.

Side Entrance $1,500. Runabout $1,250
Our new [1906] Doctor's Special $1,425
Light Truck $1,400

PREMIER MOTOR MFG. CO.
1001 George St., Indianapolis, Ind.
Members American Motor Car Manufacturers' Association, Chicago

WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

OFFICE MANAGER
(Must be proficient in double entry book-keeping)

EXPERIENCED CORRESPONDENCE MAN

SUITABLE REPRESENTATIVE FOR FOREIGN TRIP

All departmental heads and prominent attachees must become financially indentified with the business.

Address
"COMMERCIAL"
CARE OF MOTOR AGE, CHICAGO

Digitized by Google

The Waterless Knox

Always ready for use and can be used all day long any day in the year.

The Knox Patent Corrugated Pin System of air cooling is the best cooling device extant and the only one that makes satisfactory all-the-year-round service possible.

Knox 2-cylinder cars give more speed than most 4 cylinder cars of anywhere nearly equal horse power, but cost far less for up-keep and running expenses.

THE KNOX LINE offers the greatest variety of commercial car types, each one a proved success, the result of years of experience in making and selling automobiles for real service.

Catalog of Passenger or Commercial Cars on application

Agents in all Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers Gasoline Commercial Cars

Members A. L. A. M.

Talkin' of the Cost of Up-Keep

THE ROYAL Tourist Cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little, touring or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is put together with proper care. Money is freely spent for best materials. That's why.

That is also the reason why we were able to roll our cars over in the Vanderbilt Trials and finish among the first.

ROYAL

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., 58th St. and Broadway, New York
The H. Buffee Automobile Co., 1449 Mich. Av., Chicago
Automobile Supply Co. Ltd., 24 Temperance St., Toronto
G. J. Denham, 182 Columbus Ave., Boston
G. W. Caplin, 424 So. Fifth Street, Minneapolis
Motor Shop, 317 N. Broad St., Philadelphia
Westmoreland Automobile Co., 4396 Olive St., St. Louis.

Automobile Lamp Manufacturers

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.
Badger Brass Mfg. Co. (Solar). Kenosha, Wis.
Commercial Acetylene Co., New York City, N. Y.
B. E. Dietz Co., New York City, N. Y.
A. H. Funke, New York City, N. Y.
Gray & Davis, Amesbury, Mass.
Manhattan Lamp Works, New York City, N. Y.
Motor Car Equipment Co., New York City, N. Y.
New York Coach & Auto Lamp Co., New York City, N. Y.
Rose Mfg. Co., Philadelphia, Pa.
Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

It is easy to avoid trouble—*simply insist upon licensed burners.*

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

THE

Kellogg Multiple Gear Pump...

JOBBERS
DEALERS
USERS

This is the limit o perfection. ... 1906 Catalogue will soon be ready.

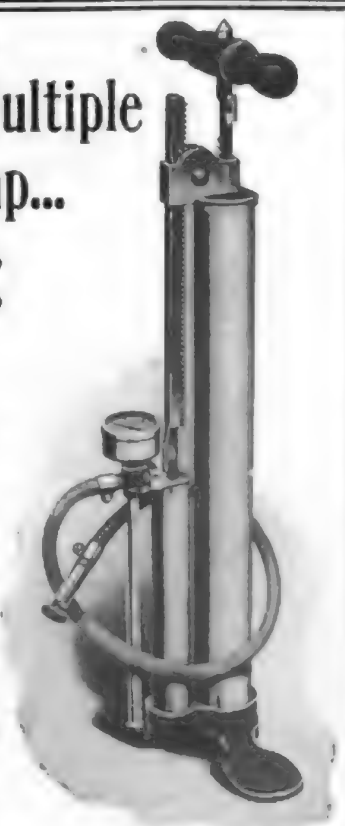
...Write...

WRAY PUMP & REGISTER CO.

191-193 Mill St.

Rochester, N. Y.

Or Brandenburg Bros' & Alliger, 103 Reade St., New York City, 83 Lake St., Chicago, Ill.



Digitized by Google

ELECTRIC

Broughams Landaulets
Victorias Station Wagons
Coaches Ambulances, etc.

Express Wagons
Delivery Wagons
Baggage Vans, etc.
Brewers' Trucks
Dumping Trucks
Machinery Trucks
Hoisting Trucks, etc.

Over One Hundred Standard Designs, One to Six Tons Capacity

VEHICLE EQUIPMENT CO.

Sales Department, General Office and Works
LONG ISLAND CITY, NEW YORK

Largest Builders of Electric Vehicles in the World

1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.
AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.

And the chances are ten to one that if you are forced to ride around the block on an ordinary tire with ordinary rims your tire will be rim-cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough. But if you take the strap like Fig. 2, with a little sawing you can cut it.

Fig. 1

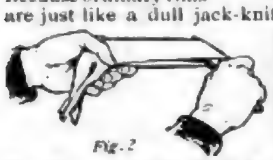


Fig. 2

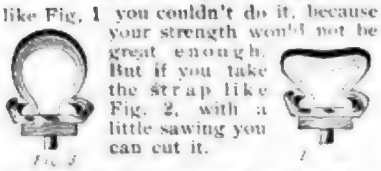


Fig. 3 Fig. 4

That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire.

Fig. 5

But just as soon as it gets flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.

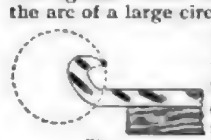


Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.

Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without the least injury to the tire. We have the evidence if you would like to see it.

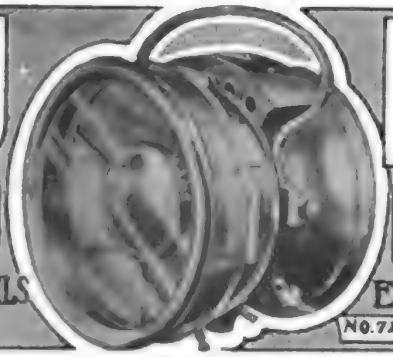
This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, AKRON, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 23 W. 45th St.; Chicago, 10 Lake St.; Cincinnati, 262 East Fifth St.; St. Louis, 1239 N. Broadway; Cleveland, 69 Frankfort St.; Philadelphia, 1221 Spring St.; Denver, 25 Sixteenth St.; and Detroit, 242 Jefferson Ave.

Digitized by Google

E & J LAMPS



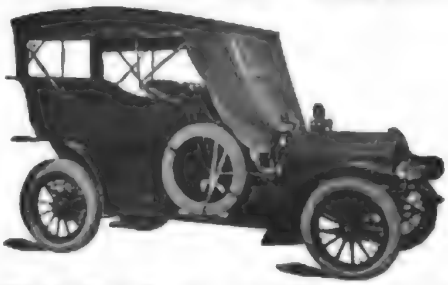
GAS HEADLIGHTS

OIL SIDE LIGHTS

CATALOGUE OF LATEST MODELS SENT ON REQUEST

EDMUNDS & JONES MFG. CO. NO. 72. A. DETROIT MICH. U.S.A.

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

LATEST TYPE WILLARD LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company

Cleveland, Ohio

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.

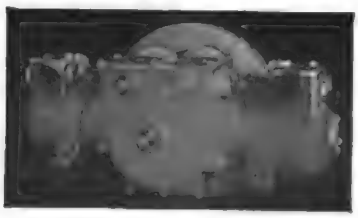
THEY MAKE BAD ROADS GOOD.

WEED CHAIN TIRE GRIP CO.

SEND FOR BOOKLET "C" 28 MOORE ST. NEW YORK CITY.

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

Half-Tones .:. Etchings
Original Photographs and Drawings

published from time to time

IN MOTOR AGE ARE FOR SALE

Price for Half-Tones and Etchings, uniformly 10 cents per square inch, with a One Dollar minimum charge. Price for Photos and Drawings on application.

MOTOR AGE, 509 Michigan Avenue, CHICAGO

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

Digitized by Google

Don't use leather belts

They cause no end of trouble with your lubricating system and fan. You should use the

TRADE MARK

Fowco

Steel Belt

Tough and durable. Won't slip, break or stretch.

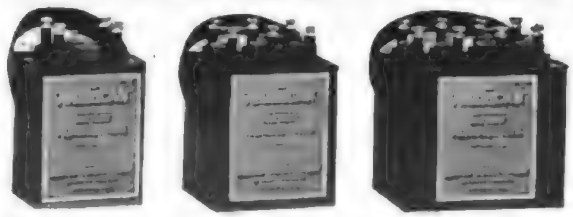
"Lasts as Long as the Car"

Ask your Auto supply dealer for it, or send us $3 and length of present belt and name of car. Money back if not satisfactory.
Write for Circular D

Philadelphia Ornamental Wire Co.
628-630 Filbert St., Philadelphia

THE "AMERICAN"

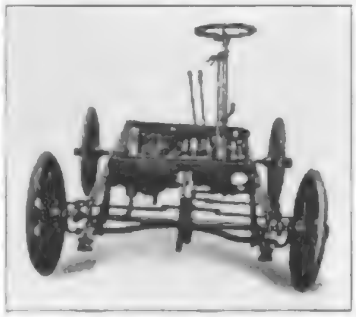
STORAGE BATTERY FOR IGNITION—MONITOR TYPE—



VOLTAGE—4, 6 AND 8. CAPACITY—20 AMPERE—HOURS. PRICES—$6.00, $9.00, $13.00
OTHER STYLES—$3.25 to $32.00.

CATALOGUES ON REQUEST. ESTABLISHED 1899.

AMERICAN BATTERY COMPANY
165 SOUTH CLINTON ST., CHICAGO, ILL.



Hall's Patent Front Drive and Steering Device
Patented October 1, 1901

STOP

pushing your Auto. Get

FRONT DRIVE

which will PULL your Automobile same as a team of horses.

Also does away with Sticking in the Mud, or Skidding on Wet Streets

Write for full particulars.

For sale at
BECK & CORBETT'S IRON CO.
ST LOUIS, MO.

Manufactured by
AUTO FRONT DRIVE MFG. CO.
2821 Easton Avenue
ST. LOUIS, MO.

STOP THAT NOISE!

NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

LET US HEAR FROM YOU.

THE NEW PROCESS RAW HIDE CO.

SYRACUSE, NEW YORK

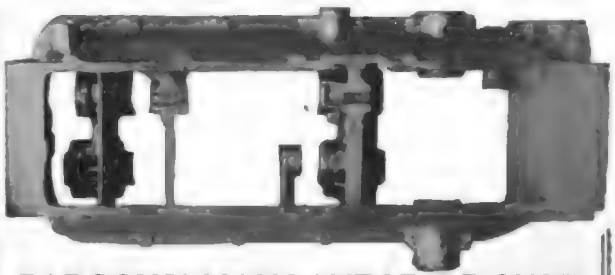
MUD GUARDS

HOODS AND FORGED IRONS

"The Best Kind"

HAYES MFG. CO.

750 Bellevue Ave. Detroit, Mich.



PARSONS' MANGANESE BRONZE TRANSMISSION CASE CASTING

We have already furnished over 400 of these castings for the 1500 Cars of the Locomobile Company.

The Wm. Cramp & Sons Ship and Engine Building Co., *Philadelphia, Pa.*

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

Chicago and Cincinnati

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

Monon—C. H. & D.

Ride this way once and you'll ride again—we think.

CHAS. H. ROCKWELL, Traffic Manager. **CHICAGO** FRANK J. REED, Gen. Pass. Agt.

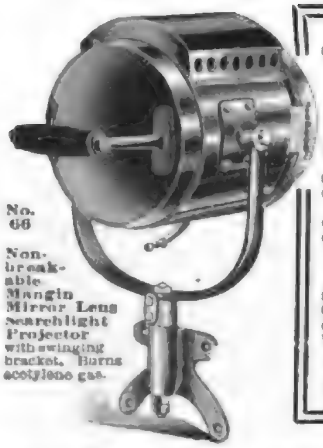
Digitized by Google

Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3¼x3½ in., 12-14 B. H. P.
Water cooled, 4 cylinder, vertical, 3½x3½ in., 14-16 B. H. P.
Water cooled, 4 cylinder, vertical, 4x4½ in., 20-22 B. H. P.
Water cooled, 4 cylinder, vertical, 4½x5 in., 35-40 B. H. P.

MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.



No. 66
Non-breakable Mangin Mirror Lens searchlight Projector with swinging bracket. Burns acetylene gas.

No handsomer searchlight made than

The Neverout

TRADE MARK

Mirror Lens Searchlight

nor does any other give such complete satisfaction.

The same distinctive beauty of design marks the new Neverout.

patent safety gas producer

Makes gas only as needed and furnishes a pure, dry gas. Gives an intensely white, penetrating flame and is instantly lighted and extinguished.

Write for free illustrated catalogue

ROSE MFG. CO., 912 Arch St., Philadelphia

That Weak Storage Battery

Is apt to cause trouble when you least expect it. Insure yourself against all ignition troubles by installing an

APPLE AUTOMATIC SPARKER

Delivers the current with unfailing regularity. Keeps the battery charged at all times. No launch, automobile or stationary engine should be without one. We make over 80 different articles for ignition purposes.

THE Apple Storage Battery Charger

WRITE US FOR FURTHER INFORMATION

The Dayton Electrical Manufacturing Co. 75 Beaver Bldg. DAYTON, OHIO.

Veeder

ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

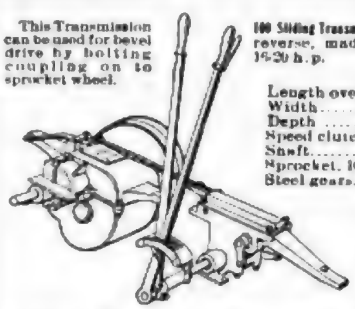
Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder. VERY TOUGH AND HARD.
S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc. VERY HARD AND DURABLE, but cannot cut the journal.

In ordering Phosphor Bronze Castings state adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

This Transmission can be used for bevel drive by bolting coupling on to sprocket wheel.



100 Sliding Transmissions, 3 speeds forward and reverse, made for 2 cyl. Cleveland car, 16-20 h.p.

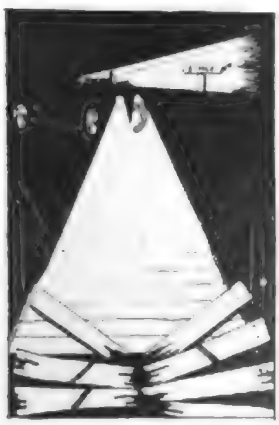
DIMENSIONS

Length over end supports	24 inches
Width	18 "
Depth	11 "
Speed clutch	14½ "
Shaft	1⅝ "
Sprocket, 10 to 1h	1¾x⅝ "
Steel gears, hardened	8 pitch

PRICE $60.00 NET

The Automobile Supply Company

1339 Michigan Blvd., Chicago, Ill.



"Lights a turn before you make it"

THE IMPERIAL-LYON Automatic Lamp Adjuster

Connected up and operated by the steering knuckle rod.
Makes a turn more with the wheels.
Lights a turn before the body of the car swings around.
Lessens the dangers of night riding.
Will fit any make of car; will carry any make of lamp.
Handsomely finished in solid brass.

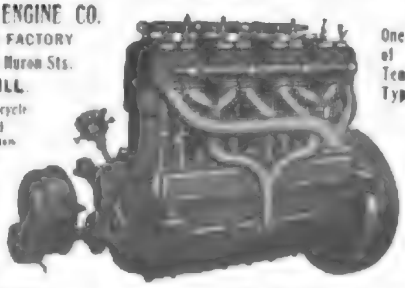
Let us send you our "Lights a turn" circular and prices. Write today.

The Imperial Brass Mfg. Co.
249 S. Jefferson St., Chicago
Motor Car Equipment Company, 55 Warren St., New York, Sole Export Agents

MOTORS—All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury and Huron Sts.
CHICAGO, ILL.

1½-40 h. p. 2 and 4 cycle
Designs and Specifications
From us are up to date and money savers.
SPECIAL SHOP WORK
Inspection and Testing Experts
Transmissions, Reverse Gears, Marine Outfits
Telephone North 1607



One of Ten Types

Type B—3⅛ x 4½ Engine

Digitized by Google

BRISCOE MFG CO.

Makers of

SHEET METAL PARTS

For Automobiles

For obvious reasons we prefer not to insert in our advertising matter, at this end of the season, illustrations of our 1906 designs and construction details. Those who are in correspondence with us, however, know what is doing. Manufacturers who want inside information will receive prompt replies to their letters.

Our two large plants are ready to take care of our rapidly increasing business. We can not only promise but make deliveries.

During the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers, among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000

BRISCOE RADIATORS

are now cooling automobile engines.

We make
Both Honeycomb and Tubular
Radiators
Iron and Aluminum
Hoods and Fenders
Sheet Metal
Dashes and Seats
Galvanized Iron and Copper
Gasoline and Water Tanks
Sheet Metal
Runabout Boxes

Write to our Nearest Office for Estimates and Get in Line for 1906

BRISCOE MFG CO.

DETROIT, MICH. and NEWARK, N. J.

The "Perfect" Washer

The Synonym for Convenience

Mr. Garage Owner, your establishment *demands* this improvement.

Saves Time, Work, Water, Temper and Money

For keeping motor cars spick and span this device is unapproachable.

The Perfect Washer is strong, durable, reliable. Refuses to wear out or get out of order. Practically noiseless in action. An ornament to any garage.

Five styles. Prices from $20 to $100.

Shipped to any responsible person or firm on approval.

Send for illustrated descriptive booklet containing full information in regard to the Perfect Washer.

Sold on Thirty Days' Trial

Perfect Mfg. Co., Saratoga Springs, N.Y.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

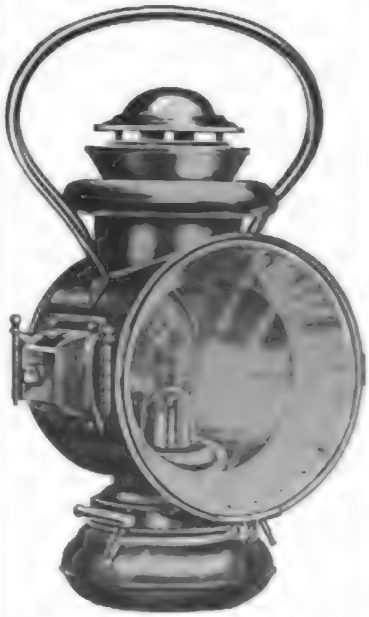
A LUBRICATOR FOR ANY CAR, ANY SYSTEM

An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.



THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

C. T. HAM MFG. CO.

ROCHESTER, N. Y.

Digitized by Google

Bausch & Lomb MANGIN Search Light Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.

Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.

ROCHESTER, N. Y. NEW YORK. CHICAGO.
BOSTON. SAN FRANCISCO. FRANKFURT, A/m Germany.

WITHERBEE

Storage Batteries

Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort*, and *any twist* cleans the entire porcelain to the whiteness of snow.

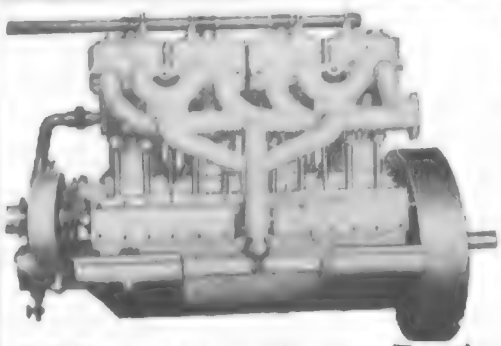
To remove the porcelain only, loosen the clamping nut and it *drops* out of its holder, and the gaskets of copper drop with it. No digging!

It is *nickeled* inside and out. *Highly polished* and *rust-proof*. Sparks between *two adjustable* points and not between *one* point and the *shell*. Its points are *protected*.

Porcelains are *hand turned* and so perfectly glazed that soot cannot *stick* to them. Their threads are cut to perfection, and *every* particle of the idea of ringaroses is left out of them. Can you think of a way to improve them regardless of cost?

Postpaid, Anywhere, $2. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.



GASOLENE MOTORS

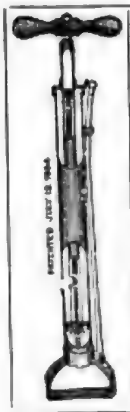
FROM 1 to 12 Cylinders 12 to 180 H. P.

We build Gasolene Motors for Racing Cars, Passenger Busses, Delivery Trucks, Launches, and Grading Locomotives.

Correspondence Solicited

Milwaukee Auto Engine & Supply Co.

706-708 Winnebago Street. Milwaukee, Wis.



SKINNER COMPOUND TIRE PUMP

30 lbs. pressure with less effort than 50 with any other

$5 ON APPROVAL AT ALL DEALERS

Skinner & Skinner

Manufacturers

4133 Indiana Ave., Chicago

Digitized by Google

Of course if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
THE LEWIS & MATTHEWS CO.
Foreign and Domestic Cars — Automobile Selling Agts. 66, 68, 70 Stanhope St. Cable Address: "Autohead" Telephone Tremont 711 — Garage Supplies Repairs Used Cars
Boston, Mass., June 23, 1905

Herz & Company, 187 Elm St., New York, N. Y.:

Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.

Very truly yours, THE LEWIS & MATTHEWS CO.,
Ralph C Lewis (M. M.)

The chauffeur shouts in tones of mirth,
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleansing.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

Special Prices on Clincher Tires
FOR OCTOBER

One of the best tires on the market. We are on the inside.

	Casing	Inner Tube
28x2½ . .	$13.94	$3.84
28x3 . .	22.80	4.64
30x3 . .	24.40	4.96
30x3½ . .	31.69	7.04
32x3½ . .	33.75	7.52
32x4 . .	38.93	9.09

We can supply other sizes at proportionate prices.

Neustadt Automobile & Supply Co.
826-28-30 S. 18th St. ST. LOUIS, MO.

HOT SPRINGS, ARK.
Only 20½ Hours from Chicago
VIA THE
WABASH

You can leave Chicago daily at 11:30 A. M., on the

BANNER BLUE LIMITED

the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.

Write for free Booklet telling all about this popular health and pleasure resort.

Ticket Office, 97 Adams St.
CHICAGO

C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A., Chicago.

MENDENHALL'S ROAD MAPS

"ROADS MAPS" Ohio, 25c; S. W. Ohio, 25c; N. Ohio, 25c; Ind., 25c; N. W. Ind., 25c; Ill., 25c; Ky., 50c; Mich., 25c; [illegible]; N. Y., 25c; N. J., 50c; Wis., 25c.
C. S. MENDENHALL, Pub., 508 Race St., Cincinnati

MOTOR AGE
GETS THE NEWS
309 Michigan Ave., Chicago

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

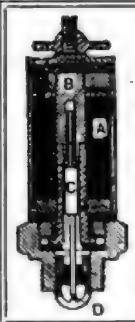
Rajah
SPARK PLUGS

The Most Reliable IGNITION ABSOLUTELY SURE

Price, Postpaid $2.00

RAJAH AUTO SUPPLY CO., 140 Washington Street New York

SHELBY
SEAMLESS-STEEL-TUBING
BEST MADE FOR AUTOMOBILE CONSTRUCTION.
SEND SPECIFICATIONS
WE QUOTE PRICES
SHELBY STEEL TUBE CO.
PITTSBURG, PA.
BRANCH OFFICES—NEW YORK—CHICAGO.

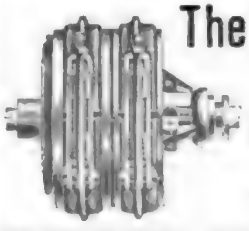


LOW TENSION MAGNETO
THE GARON SYSTEM OF IGNITION

Combines all the good points of **the Jump Spark and Make and Break**, and is perfectly reliable. Easily applied to any engine, whether originally built for jump spark or make and break ignition.

Absolutely guaranteed *Let us show you how perfectly it works*

ASTER CO., 1591 Broadway, NEW YORK CITY

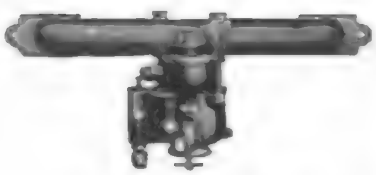


The Ball Improved Transmission
and REVERSE GEAR
— FOR —
Automobiles and Motor Boats
MADE ONLY OF SPUR GEARS
Patented April 9, 1901; Nov. 3, 1903; Jan. 12 1904; Feb. 23, 1904.

NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.
Western Agents: J. H. Neustadt Co., St. Louis, Mo.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, sing'e cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

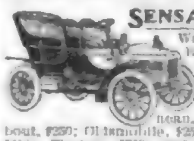
CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1297
1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1321 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions 'PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago



SENSATIONAL PRICES
We are closing out all sh rt lines together with all sec- ond hand and shop worn models to make room for 1906 auxiliary goods now coming in—Hoffman touring, now, $500; Murray runabout, $250; Oldsmobile, $250; Buckboard, $300; Gale, $450; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller," "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogue.
MEAD MOTOR CO. 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTING IN SUPPLIES AUTO
FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 49
EXCELSIOR SUPPLY CO.
ESTABLISHED 1876 CHICAGO

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1328 Michigan Ave., Chicago
Telephone, South 1658

GOOD AGENTS WANTED
PREMIER
FOR ILLINOIS AND IOWA
RALPH TEMPLE
309 Michigan Avenue CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
136 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer, Stevens-Duryea, Orient, Pierce-Arrow, Oldsmobile, Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1722-26 Michigan Ave. Phone 1099 South
321-25 Fourth St. Phone 2781 Main

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobiles. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., Ft Wayne, Ind

CHAIN TOOL

NEW CUT. READY

35c

THE HUSKY KIND

SENT PREPAID FOR 48c

THE MOTOR CAR SUPPLY CO.

1427 Michigan Avenue CHICAGO, ILL.

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building :: :: Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 302 JACKSON BOULEVARD, CHICAGO

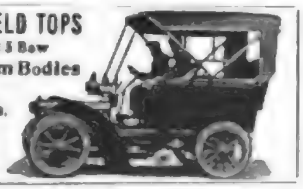
SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

72 Strake Ave Brightwood SPRINGFIELD MASS.



Eclipse Tops

Look Better Wear Better Made Better Are Better

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.

352 S. Claremont Ave. CHICAGO.

Special Design Finest Quality Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.

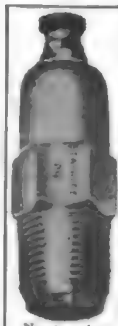
315 Michigan Ave. Chicago

WHY LUBRICATE THE ROADS?

NON-FLUID OILS

Do not leak from gear cases or bearings like fluid oils, nor soften up and melt like tallow greases. Ask your dealer or write us for free sample, prepaid.

N.Y.&N.J. Lubricant Co. 14 Church St., New York 79 9th St., San Francisco



STA-RITE

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary.

Condense Your Orders

thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1906, price list.

The R. E. Hardy Co.

225 W. Broadway, N. Y.

No. 4, ½-in. Porcelain, $1.50

P. J. DASEY 451 Wabash Ave., Chicago

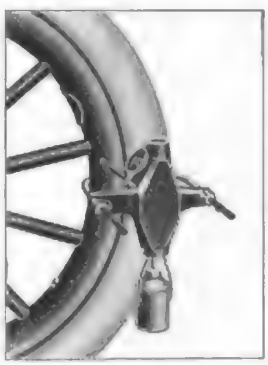
No. 34, ¾-in. Mica, $1.75

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY



ANYBODY CAN USE IT

Blowouts, sandholes, glass cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co.

Topeka, Kan., U. S. A.

JUMP SPARK COILS

For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

Send for Catalogue K.

THE KNOBLOCK-HEIDEMAN MFG. CO., South Bend, Ind.

Standard Roller Bearing Co.

STEEL BALLS

BALL BEARINGS

Roller Bearings

Automobile Axles

Send for Catalogue. PHILADELPHIA

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation dans le vide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lot of 12 cans

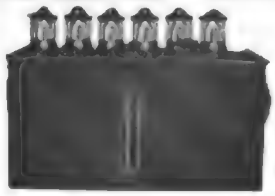
SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.

105 WALKER STREET NEW YORK

Force Feed ubrication

Constant Sight Feed. No Liquids



McCord & Co., 1402-90 Old Colony Bldg., Chicago

E. J. Day & Co., Pacific Coast Distributors 324-326 Golden Gate Avenue, San Francisco, Cal.

A PLEASURE TO HEAR

THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches

Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.

970 Hamilton St., Dept. B, CLEVELAND

New York Branch, 148 West 36th St.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY

WARREN, OHIO, U. S. A.

Auto Top Bronzes

Bow Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes Tools, Boxes, Guard Bolts, etc.

C. W. COOPS CO.

3 Appleton St., Boston, Mass.

MOTOR AGE

Gets the News

Get Motor Age

$2.00 a Year

309 MICHIGAN AVE., CHICAGO

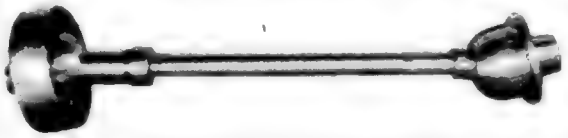
ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.

BUFFALO, N. Y.

Digitized by Google

All parts made from best quality of steel. Steel drop forgings used for all parts under stress of power transmission. All parts made to gauge and are interchangeable.



A combined Universal Joint and Propeller Shaft is one of the many specialties in the line of

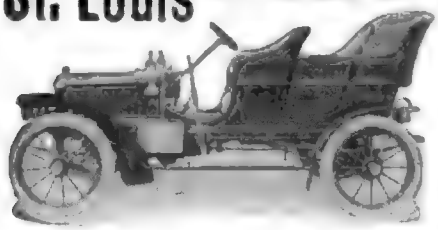
SPICER DUST-PROOF UNIVERSAL JOINTS

and is worthy of investigation.

SPICER UNIVERSAL JOINT MFG. CO., Plainfield, N. J.

Direct Factory Representatives: E. Franklin Peterson, 168 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

St. Louis 18-22 30-34 **Actual H.P.**



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.

PROSPECT HEIGHTS PEORIA, ILL.

OLD Tires Made **NEW**

New Tires Made **Puncture-Proof**

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1303 Michigan Ave., CHICAGO, ILL. Tel. So. 3 1301

ST. LOUIS, MO.

Gilbert Auto Fabric Supplies

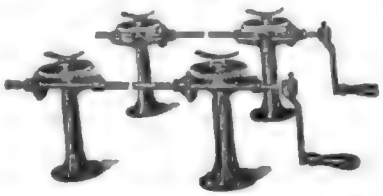
LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.

New Haven, Conn.

REST YOUR TIRES with the **"Springfield" Auto Lift**



Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DAY & CO., Pacific Coast Agents, San Francisco

THE SHAWVER CO., Springfield, O.

THE YANKEE SILENT MUFFLER (Pat.)

Excels all Mufflers because the discs expand according to the size of the explosion. A vacuum is created between the exhaust valves and the Muffler, and back pressure is overcome. 10 per cent more power guaranteed. Radiation so great that the Muffler keeps cool. Made to fit all makes of cars. Send for catalogue and price.

D. B. SMITH & CO., Utica, N. Y., U. S. A.

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.

Jersey City, N. J.

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company

Pittsburgh, Pa.

MOTOR CAR SPECIALTIES and SUNDRIES

WE SELL EVERYTHING
WRITE FOR CATALOG

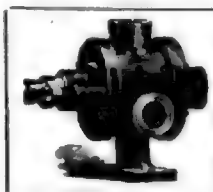
THE AUTOMOBILE EQUIPMENT CO.

252 Jefferson Ave. Detroit, Mich

E. F. LESTER, Mf'r.

ALUMINUM ARROW BRAND SOLDER AND FLUX

FAYETTEVILLE, N. Y.



LOBEE ROTARY PUMP

4000 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 240 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York, A. L. Dyke Auto Supply Co., 4708 Olive St., St. Louis, Mo.

EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS

ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.

HIGH-GRADE

EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO.

Corner May and Commercial Streets, Dayton, Ohio

GOOD TOPS

We make them. LONDON tops fit any car. GUARANTEED all styles. Prices, samples and description of construction mailed on request.

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

Eclipse Pocket Ammeter

For General Battery Testing
0 to 20, 0 to 30 Amperes.

"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.

Eldredge Electric Mfg. Co.

Springfield, Mass. U. S. A.

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY

WRITE FOR SAMPLES AND PRICES

MILWAUKEE STEEL FOUNDRY CO

MILWAUKEE, WIS.

The IGNITION PROBLEM is SOLVED

in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No Batteries. No Coil. No Commutator.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N.Y.

SPROCKETS

Chains and Differentials

CULLMAN WHEEL CO.

1021 LUNNING STREET, CHICAGO, ILL.

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

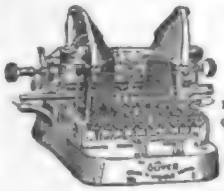
DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 240 North Broad St.
New York, 43th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 33 South Raymond Ave.
Minneapolis, 3d Ave. South & 8th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 306 Centre Ave.
Rochester, 130 South Ave.
Portland, Ore., 10 5th St., N.
Cleveland, 404 Huron St.
Detroit, 265 Jefferson Ave.
Chicago, 24 East Lake St.
Buffalo, Cleveland Automobile & Cycle Co., 649 Main St.
Boston, 39 Stanhope St.
Savannah, 309 Bull St.
St. Louis, 3844 Olive St.
Denver, 1463 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco. Toronto, Canada

We Want Agents
for the
OLIVER
Typewriter
—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,
100-200 WABASH AVE.,
CHICAGO, ILL., U. S. A.
Foreign Office
75 Queen Victoria St.,
London, England.

TOOLS for producing duplicate Metal Parts

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class, and every effort will be made to give satisfactory service.

L. T. GAUSS, 222 Mill St., Rochester, N. Y.

DIES for blanking, forming and drawing
DRILL JIGS
MILLING FIXTURES
VISE JAWS
SPECIAL CUTTERS, ETC.

Colorado
At Her Best

In late summer Colorado is at her best. The green of the verdure on mountain and meadow is slowly turning to crimson and gold. Afar looms a peak whose snow-capped summit is enshrouded in autumnal haze. The air is laden with the spice of mountain pines and fir trees.

Colorado is surely the best place to go for the autumn vacation.

Very low rates via the Rock Island—Standard and Tourist sleepers and electric-lighted chair cars.

Go via Chicago, return via St. Louis if you like.

Use this coupon to learn all about it.

Rock Island System

A. B. SCHMIDT, Gen. Agent Pass. Dept.,
91 Adams St., CHICAGO.

Please send me Colorado booklet, with list of hotels and boarding houses, and tell me about Rock Island service.

Name_____

Address_____

WE ARE SOLE IMPORTERS OF
NIEUPORT IGNITION OUTFIT
The Best in the World.
Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire
ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

Dust Guards
Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN
124 W. Jackson Blvd., CHICAGO, ILL.

WHAT YOU WANT—WHEN YOU WANT IT
SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y
ALUMINUM CASTINGS BRONZE

SPIRAL TUBING RADIATORS
HOODS ANY STYLE OR SIZE
LONG MFG. CO.
381-385 Wabash Ave. CHICAGO

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

If you want the agency for a $2,500 car to sell at $1,250, write today for the most attractive proposition in America.
Wayne Automobile Co., Dept. H Detroit, Mich.

Digitized by Google

For your Garage

Machine Wrenches, all kinds and sizes, milled openings.

For your Auto

Our General Service Wrench, light, long, and strong. Get our illustrated Wrench Booklet.

The Billings & Spencer Co. : HARTFORD CONN.

If You Are a Judge of Good Plugs

so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS

Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 2 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrator** absolutely impossible; running packed with grease; built like a watch, fool proof's work throughout. We make 18 models and fit **any** make of motor. State make of your motor when ordering.

HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

"Everything for the Autoist but the Auto"

THE NEW BOOK IS READY PLEASE SEND FOR IT

We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

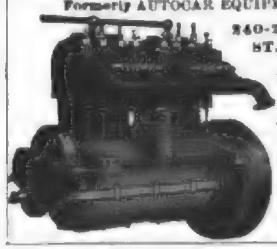
Saks & Company Broadway, 32d to 34th Streets NEW YORK

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.

Formerly AUTOCAR EQUIPMENT CO.



240-244 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETERSON & DRAPER

Direct Factory Representatives.

"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

The Auto Washer

Washes any vehicle in one-third the time of ordinary way. Attaches to any hose. Consists of fine spray nozzle with sponge holder. Water passes through the sponge keeping it always clean. Does not scratch paints. No splashing, no water wasted. You can do your own washing without soiling your hands or clothes, or your man can do it, better, quicker and with less wear on paint than any other way. Autos, carriages, sleighs, delivery wagons. $3.00, express paid. Booklet Free. Live Agents wanted.

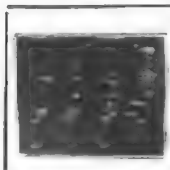
J. GIBSON ARDREY
Rochester, New York

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2020 Axtell Street CLEVELAND, OHIO



All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

MISCELLANEOUS.

FOR SALE—Toledo steamer, $95; will trade. 16 E. Washington St., Huntington, Ind.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

WILL TRADE—Good steam auto in A1 shape for Orient buckboard. Address C., care MOTOR AGE.

FOR SALE—White steamer; 1904 Model, canopy top, side baskets, acetylene lamps, three new tires; in perfect condition and ready for shipment from factory; cheap. P. O. Box 462, Mobile, Ala.

FOR SALE—One new Oldsmobile, just from the factory; will sell at a bargain; also one Elmore, second-hand. Address Green's Fork Auto Agency, Green's Fork, Ind.

FOR SALE—One 1905 40 H. P. Thomas, A1 condition; looks like new; cost $3,175 this spring; will sell for $1,975, with canopy top, glass front. W. S. Mead, 22 East 42nd St., New York.

FOR SALE—"Dyke," 4x4; 5 H. P. Gasoline motor; practically new; suitable for light runabout; complete with transmission and all accessories; price, $60. F. E. Boehm, Braidwood, Ill.

FOR SALE—Oldsmobile runabout, or will trade for horse and rig if taken soon. For particulars write Art Mosier, 721 W. Beech St., Cherokee, Iowa.

FOR SALE—A 1906 White Steamer, side entrance, never used and absolutely perfect; owner leaving for Europe soon. J. M. Shelley, Omaha, Neb.

WANTED—Cash buyer for 1905 Olds runabout, excellent condition. Write for particulars. Box 58, R. F. D. No. 2, Manchester, Iowa.

FOR SALE—Rambler Model E, good order, cheap. Address D. McC., care MOTOR AGE.

Digitized by Google

SPARK-PLUGS—Large lot for sale at low figures. The best plug on the market. Standard or metric. Will job whole lot or sell in smaller quantities. Write for price, stating number wanted. Mechanical Plug Company, 3924 Olive St., St. Louis, Mo.

WANTED—1905 two-cylinder runabout in exchange for Rambler Model E. Address F. P., care MOTOR AGE.

DURYEA—We are constantly offered machines of all the popular makes, such as Stevens-Duryea, White, Knox, Pierce, Franklin, Winton, Queen, Olds, Orient buckboard, etc., on which we can make very attractive prices. Do NOT confuse these cars with the USUAL second-hand car. We overhaul them thoroughly, so that they are almost as good as new, sometimes better. If you want a GOOD auto CHEAP write us at once. We quote prices that move them quickly. DURYEA POWER COMPANY, 400 River St., Reading, Pa.

FOR SALE—1905 Mitchell runabout; run less than 500 miles; demonstration given; $450 cash. No trades considered. H. C. Scruggs, 300 Broad St., Nashville, Tenn.

FOR SALE OR TRADE—2 sections, 1,280 acres of good ranch land in Presidio county, Texas; will trade for automobiles. Alliance Motor Car Co., Alliance, Ohio.

FOR SALE—Remodeled type eight Autocar. Four cylinder 20 h. p. Rutenber motor. Splitdorf dash coil and commutator, Shebler carbureter, McCord dash, automatic oiler, six lamps, baskets, storm covers and extra parts; tires all new, 32x3½; will carry five passengers anywhere; $1,250. 1406 Oxford St., Philadelphia.

WANTED—Auto in exchange for old plantation in Scott Co., Tenn.; clear title; no incumbrances. Address Box 531, St. Anagar, Ia.

FOR SALE—Late '04 Packard, in fine condition, with $300 worth of extras; extension top, headlights, speedometer, odometer; $2,100 f. o. b. Kansas City; run 4,300 miles. N. T. Haynes, 3808 Central St., Kansas City, Mo.

WANTED—Immediately, competent repairman as foreman; one reliable and who thoroughly understands and can successfully repair Peerless, Winton, Franklin, Cadillac, Waverley automobiles; only good men need apply. Riddell Automobile Co., Des Moines, Iowa.

FOR SALE—6 H. P. air cooled motor, $75; 10 H. P. water cooled motor, $85, new; 15 tube radiator, $10; hood, $12; McCanna 4 feed lubricator, new, $15; No. 10 Rose headlight, $12. Any of these parts sold separately. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Ford automobile, with tonneau; in fine condition; a bargain. Address C. E. Cook, Delaware, Ohio.

FOR SALE—1904 Orient buckboard runabout, with body; center steer; fine condition; $[illegible]; reason for selling, am getting large delivery machine. J. E. B. Wright, Amarillo, Tex.

FOR SALE—At a bargain, one 1905 White Steamer, complete with cape top, hampers, full lamp equipment, generator and lamps; been used little, practically new, in first class running shape; 3 extra cases, 2 extra inner tubes; full equipment cost about $2,800; will sell for $1,600 if taken at once. Will gladly demonstrate. Jacob Roth, Erie, Pa.

FOR SALE—16 H. P. Rambler, complete with top, acetylene lamps, etc. Nearly new. $925. Howard W. Gill, Park Ave. and Biddle St., Baltimore, Md.

KNOX BARGAIN

1904 Knox Leroy surrey, with canopy top, glass front, fully equipped, in first-class condition in every way; original cost, $1,675; can be bought now for $900. Must be sold at once. J. F. Kerfoot, Ottumwa, Iowa.

FOR SALE—1904-5 "Premier," 4-cylinder, 16-horse; cost, with swell equipment, $1,600; detachable tonneau; condition perfect throughout; $850 cash. H. Coulson Fairchild, Passaic, N. J.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

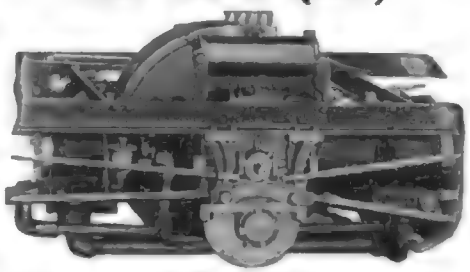
FOR SALE—A 1905 Model "F" Knox touring car, with glass front, 32x4 tires; guaranteed to be in A1 condition; will sell cheap for cash. Address W. E. W., 219 South 6th St., Minneapolis, Minn.

FOR SALE—Buick, Model C. New, but used a little for demonstrating; not run more than 150 miles. A splendid specimen of this popular car. Flak tires. Will sell $200 below list to realize cash quickly. Kentucky Automobile Company, Louisville, Ky.

FOR SALE—8-10 passenger wagonette; sample car 1905 6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

EQUALIZED SPRING TRUSSED FRAME
OF THE
1906 Logan
That Car of Quality

One of Many Points of Strength



One of Many Reasons for Comfort

PATENT PENDING

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

WANTED—To trade best grade Story & Clark piano for runabout, Stevens or Reo preferred. O. F. Holley, Madelia, Minn.

FOR SALE—2 cy. 20 H. P. Winton, with extension cape top and glass front; an exceptional bargain. H. O. M., care MOTOR AGE.

FOR SALE—High grade 8 h. p. double opposed engine, $125. 4 h. p. Marine and Auto motors, $65. Write. A. J. Houle Co., S. East St., Holyoke, Mass.

AUTOMOBILE SCHOOL

CHICAGO SCHOOL OF MOTORING.

The original Automobile School in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request.

Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied.

CHICAGO SCHOOL OF MOTORING,
264 Michigan Ave. Phone Har. 110.

FOR SALE—Haynes-Apperson runabout, '03 model; condition perfect, including mechanism, finish and tires. Fine full leather top. A beautiful and smooth running machine. Cost originally $1,450. Will make quick cash sale for $525 f. o. b. Louisville. Kentucky Automobile Company, Louisville, Ky.

FOR IMMEDIATE SALE—1903 Winton tonneau, $750; 1905 Model F Ford, tonneau, 12 H. P., $695; 1905 Rambler surrey 1, 4-inch tires, like new, $825; Model E Rambler, buggy top, $225; 2—1903 Elmores, double cylinder, 12 H. P., tonneau, $200 and $300. Drop card for detailed description. Your opportunity to buy a good car below the market value. E. S. Youse, Reading, Pa.

FOR SALE—Haynes-Apperson, 1904, light touring car. Make offer. Bought late; used very little. Dr. Wm. M. Stith, Petersburg, Va.

FOR SALE—Fine 38-foot, full cabined cruising launch; torpedo stern; 4 cyl.; 5x6 Rutenber motor. Cost $4,000. Will take auto in part payment. Address "Launch," care MOTOR AGE.

FOR SALE—In Chicago, 24-horsepower, 4-cylinder Peerless automobile, in perfect order; 2 Rushmore gas lamps, separate generator, three oil lamps, two extra tires, sliding gear, rear entrance. Body painted dark olive green, running gear light cream. Noiseless and very fast. Machine seats seven. Sell for $1,250. Must have money. A. S. care MOTOR AGE.

FOR SALE—Marble Swift friction transmission, lever, joints, brake; new; bargain. 729, 164 Dearborn, Chicago.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

TIRES.

ALL KINDS RUBBERINE FILLED are puncture proof; give twice the service, saving delays; resiliency retained; get sample and prices. Also new and second-hand tires. Automobile Palace, 152 W. Jackson Blvd., Chicago.

FOR SALE—One Olds runabout, one four-cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars; also steam delivery wagons; all in first-class running order. Write for particulars if interested. K. A. Grout, Orange, Mass.

WAVERLEY electric runabout of the type styled "Speed Wagon"; new this season and in perfect condition; batteries, thirty cells of 9 p. v.; buggy top. Apply to Wm. A. Tucker, 53 State St., Boston, Mass.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

MANUFACTURERS

Desiring a practical "Auto" man with sound business judgment, experience in manufacturing lines and repairs on cars, for salesman, agent, office, etc., will correspond immediately. Address C. B., MOTOR AGE.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Tom Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

RYBERG AUTOMOBILE WORKS. CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.
661-673 Beaubien St. DETROIT, MICH

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.

Boston Mass. U. S. A.

Every operator of an Automobile, Motor Cycle, or Launch should own one of our

AMERICAN POCKET AMMETERS

For testing dry cells. The only RELIABLE pocket ammeter on the market. Lasts a lifetime.

AMERICAN COIL COMPANY

Foxboro, Mass.

WRITE FOR 1905 CATALOGUE

AUTO SUPPLY CO., 1662 Broadway, New York Agents
GEO. H. BILL, 306 McAllister St., San Francisco, Cal.

Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

HYATT ROLLER BEARING CO.

Harrison, New Jersey

ARE YOU FROM MISSOURI?

LEA TIRE PUMP

Inflates the largest tires easily and quickly, and you don't get out of breath.

Write for illustrated booklet B and proposition to agents.

William S. Jones

112 N. Broad Street Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

COMPLETE LISTS

of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

DIAMOND CHAINS

Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 79
Adams Co. 61
Adland Motor Co. 78
American Battery Co. 72
American Coil Co. 84
American Samson Leather Tire Co. 61
Apperson Bros. 71
Ardrey, J. Gibson 82
Aster Co. 77
Atwood Mfg. Co. 49
Austin Automobile Co. 67
Auto Brass & Aluminum Co. 79
Auto Directories 84
Automobile Equipment Co. 80
Automobile Front Drive Mfg. Co. 72
Automobile Supply Co. 73
Badger Brass & Mfg. Co. 40
Baker Motor Vehicle Co. Cover
Bausch-Lomb Optical Co. 76
Beaver Mfg. Co. 64
Billings & Spencer 82
Borbein, H. F. & Co. 74
Boston Auto Gage Co. 77
Bowser, S. F. & Co. 79
Brennen Mfg. Co. 62
Briscoe Mfg. Co. 75
Brown, W. H. 81
Brown-Lipe Gear Co. 62
Buckeye Mfg. Co. 64
Buckeye Wheel Co. 71
Byrne-Kingston Co. 52
Cadillac Co. of Illinois 78
Cadillac Motor Car Co. 51
Canedy, Earl 76
Carr, F. S. 65
Champion, Albert Co. 81
Chicago & Alton Ry. Co. 74
C., R. I. & P. R. R. Co. 81
Coey, C. A., & Co. 78
Continental Caoutchouc Co. 56
Continental Engine Co. 73
Continental Motor Mfg. Co. 82
Coops, C. W., Co. 70
Corbin Motor Vehicle Co. 44
Corwin Mfg. Co. 60
Cramp, Wm. & Sons Ship & Engine Building Co. 72
Cullman Wheel Co. 80
Daimler Mfg. Co. 53
Dayton Electric Mfg. Co. 73
Dayton Motor Car Co. 57
Diamond Chain & Mfg. Co. 84
Diamond Rubber Co. 82
Dietz, R. E., Co. 65
Dixon, Joseph, Crucible Co. 80
Dyke, A. L., Auto Supply Co. 80
E. H. V. Co. 55
Eclipse Buggy Co. 79
Edmunds & Jones Mfg. Co. 71
Eldredge Electric Mfg. Co. 80
Electric Storage Battery Co. 81
Electric Vehicle Co. 66
Elmore Mfg. Co. 68
Excelsior Supply Co. 78
Fairmount Engineering Works 78
Ford Motor Co. 53
Franklin, H. H., Mfg. Co. 35
G & J Tire Co. 50
Gabriel Horn Mfg. Co. 70
Garford Mfg. Co. 47
Gauss, L. T. 81
Gilbert Mfg. Co. 80
Githens Bros. 78
Goodrich, B. F., Co. 59
Goodyear Tire & Rubber Co. 70
Ham, C. T., Mfg. Co. 75
Hardy, R. E., Co. 79
Hartford Rubber Works 55
Hartford Suspension Co. 79
Hayes Mfg. Co. 72
Haynes Automobile Co. 59
Herz & Co. 77-82
Hofeller Brass Fdy. Co. 79
Hoffheimer Soap Co. 63
Holley Bros. 78
Hussey Drop Forge & Mfg. Co. 82
Hyatt Roller Bearing Co. 84
Imperial Brass Mfg. Co. 73
Importers Co. 78
Jackson Automobile Co. 60
Jeffery, T. B., & Co. Cover
Kimball, C. P., Co. 79
Kirchberger, M., & Co. 69
Knoblock-Heldeman Co. 79
Knox Automobile Co. 69
Kokomo Rubber Co. 63
Leather Tire Goods Co. 81
Lehman Bros. 66
Lester, E. F. 80
Light Mfg. & Foundry Co. 73
Link-Belt Machinery Co. 52
Lloyd Iron Roofing & Paint Co. 67
Lobee Pump Co. 80
Locomobile Co. of America 63
Logan Construction Co. 83
London Auto Supply Co. 80
Long Mfg. Co. 81
McCord Co. 79
McDuffee Automobile Co. 78
Madison-Kipp Lubricator Co. 80
Matheson Motor Car Co. 64
Mead Motor Co. 78
Mendenhall, C. S. 77
Merkel Motor Co. 73
Michelin Tire, American Branch 51
Miller, Charles E. 62
Miller Signal Co. 79
Milwaukee Auto Engine & Supply Co. 76
Milwaukee Steel Foundry Co. 80
Mitchell Motor Car Co. 36
Moline Automobile Co. 68
Monon Route 72
Morgan & Wright Cover
Motor Age 48
Motor Car Specialty Co. 84
Motor Car Supply Co. 79
Mutty, L. J., Co. 79
Myers-Dayton Top Co. 80
National Motor Vehicle Co. 60
National Spring & Wire Co. 82
Neustadt Auto Supply Co. 74
Never-Miss Spark Plug Co. 82
Newmastic Tire Co. 80
New Process Rawhide Co. 72
N. Y. & N. J. Lubricant Co. 79
New York Gear Works 77
Nordyke & Marmon Co. 67
Northern Mfg. Co. 67
Nyberg Automobile Co. 83
Olds Motor Works 39
Oliver Typewriter Co. 84
Packard Electric Co. 79
Packard Motor Car Co. Cover
Pardee & Ullman Co. 78
Pederson, J. T. 75
Pennsylvania Rubber Co. 54
Perfect Washer Co. 75
Philadelphia Ornamental Wire Co. 72
Pierce, Geo. N., Co. Cover
Pittsburg Reduction Co. 80
Pope Motor Car Co. 45
Premier Motor Mfg. Co. 68
Prest-O-Lite Co. 65
Quaker City Automobile Co. 78
Railway Appliance Co. 79
Rainier Co. 38
Rajah Auto Supply Co. 77
Reo Motor Car Co. 41
Robert Instrument Co. 74
Rose Mfg. Co. 73
Royal Motor Car Co. 69
Rubay, Leon 80
Rubber Goods Repair Co. 78
Rushmore Dynamo Works 54
Rutenber Co. 74
St. Louis Motor Carriage Co. 80
Saks & Co. 82
Shawver Co. 80
Shelby Steel Tube Co. 77
Skinner & Skinner 76
Smith, A. O., Co. 66
Smith, D. B., & Co. 80
Spicer Universal Joint Mfg. Co. 80
Splitdorf, C. F. 63
Springfield Metal Body Co. 79
Standard Roller Bearing Co. 79
Steel Ball Co. 61
Stevens, J., Arms & Tool Co. 57
Stitch-In-Time Vulcanizer Co. 79
Stolp Mfg. Co. 72
Streit, A., Machine Co. 71
Supplementary Spiral Spring Co. 74
Swinehart Clincher Tire Co. 70
Syracuse Aluminum & Bronze Co. 81
Temple, Ralph 78
Thomas, E. R., Motor Co. 43
Thompson, Chas. A., Co. 82
Timken Roller Bearing Co. 56
Trebert Gas Engine Co. 46
United States Automobile Co. 78
U. S. Jack Co. 79
Veeder Mfg. Co. 73
Vehicle Equipment Co. 67
Wabash Railway Co. 77
Walworth Mfg. Co. 84
Warner Instrument Co. 62-65
Way Muffler Co. 42
Wayne Automobile Co. 81
Weber, O. F., Co. 78
Weed Chain Tire Grip Co. 71
Welch Motor Car Co. 74
Western Tool Works 64
Wheeler, F. H. 58
White Sewing Machine Co. 57
Whitlock Coil Pipe Co. 58
Whitney Mfg. Co. 66
Willard Storage Battery Co. 71
Willis, E. J., Co. 75
Winton Motor Carriage Co. 34
Witherbee Igniter Co. 76
Wolverine Auto & Commercial Vehicle Co 50
Wray Pump Co. 69

Digitized by Google

MOTOR AGE

VOL. VIII NO. 19 CHICAGO, NOVEMBER 9, 1905 $2.00 Per Year

MOTOR SCENES IN NEW ENGLAND

NEW ENGLAND is rich in tradition and attractive to automobile tourists. Radiating from all cities there are drives, making a network over which scores of cars continually pass. Connecticut, one of the smallest of the states, is conducting a great good roads campaign; is probably building a larger percentage of mileage than any other commonwealth, and takes a certain pride in the fact that it is building its roads better and cheaper than any other state in the union. But there are districts where the good roads movement has not yet reached and where the highways continue to be the same old red gravel upon which the less prosperous husbandmen work out their annual taxes, or, at least, a part of them. For cars not of the asphalt parade class one of the most delightful short runs in central Connecticut is from Hartford to Tariffville and Granby. Tariffville is but the tail of the dog town of Simsbury, but is growing so fast as to wag the dog, while Granby is the scene of more romance than could be logically crowded into the average historical novel by even a Churchill.

Tariffville possesses all the features of an attractive automobile Mecca; there is an old hotel, modernized with new paint only, and the latest books on tours show

MODERN BRIDGES HAVE REPLACED THE OLD COVERED AFFAIRS ALL THROUGH THE NEW ENGLAND STATES

Digitized by Google

On Most of the New England Highways the Trolley Antedates the More Modern Means of Transportation, the Motor Car

that the proprietor is possessed of an excise license. It is but 12 miles from Hartford and to get to it the motorist goes through an endurance run and a hill-climbing contest that makes Eagle Rock and Pecousic hills look like tesselated flooring. It would only be necessary to brush a bug from one's collar to send a car and its occupants to kingdom come. It is the kind of road that breeds a certain respect for the sure-footed mule. Across the plains the scenery is interesting, for great white tents, 9 feet tall, cover 1,500 and 2,000 acres each. Under these tents tobacco grows. The natives know good Havana tobacco when they see it, for most of them raise it. It costs 12 to 20 cents a pound to grow it and brings 40, so the prosperity of the farmers is great. They are not so much opposed to automobiles, for most of them buy every novelty that comes out, from a new patent churn to a self-playing piano. They all have money to spend. The village barber has scores of visitors, who see him three times each week, which is uncommon in high grass country.

There are stretches of improved macadam and telford roadway, passing through some of the towns, but most of the way would afford the best known cure for a torpid liver. The heavy rains pour down the mountain sides and furrow deep holes, while the hand of man has raised water bars and thankyermams which cause the front end of a long wheel base car to oscillate with the rear seat passengers. There isn't a water bar that doesn't boast of the number of springs it has caused to break, and for a mile and a quarter there is a stretch of sandy loam where tobacco grows finely, which holds the heat uncommon well, and which has been the scene of many tires going wrong. Still, there isn't a feature about the trip which the motorist wouldn't suffer willingly to get there.

Tariffville isn't so much of a town, in a way. There is the Farmington river rolling by, which water power has been used by a lace mill and an electric light generating plant. Advantage was taken of one architect's handiwork and the natives have to count four from one end and five from the other to pick their own domicile out. Nobody could get jealous of their fortunate neighbors where all houses are alike and the skyline would be pretty monotonous to look at from the hills above if it wasn't for the regularity being occasionally pierced by a school house or church or the town hall.

The Tunxis band of Indians resided about Tariffville and everything in town is Tunxis. There is the Tunxis river, Tunxis hotel, Tunxis laundry, ad lib. Tradition tells of the residence of Lord Griffin early in the English occupation. Lord Griffin didn't anticipate the coming of automobiles, but he well knew the power of gasoline. The Indians troubled him greatly. They stole his sheep and hens. So, in a little cove where the water is still and the current nil, Lord Griffin stealthily applied some oil. Then he sought to make peace with the Indian chiefs. He would burn up the river and all the fish if the Indians didn't keep their side of a line he established. His proposition was laughed at, so the torch was applied. Sure enough, the waters blazed. Before the oil had burned off a truce had been declared. Tariffville land records continually blossom forth reference to his lordship's line as boundaries of farms.

All the land around Tariffville is owned now, or once was, by a Mitchelson. Two brothers, Ariel and Joseph C., remain to boast of their proud heritage. Ariel is located at Tariffville and drives about in a big Winton car. J. C. and his family manage to get back summers, but their address other times may be Kobe, Japan, or Sydney, Australia. Although it is a bad country for electrics, with hills eating up 130 amperes of current, J. C. does his motoring in a Columbia victoria. While Joe Mitchelson was in some lonesome and faraway location of the footstool increasing his coin, or book collections, some enterprising capitalists threw a dam across the Farmington river and flooded some

The Tariffville Dam—Most New England Streams Are Now Harnessed

Digitized by Google

A Splendid Stretch of Exceedingly Smooth Road, Guarded by Tall Shade Trees, Winds Its Way Through Old Windsor

meadow land of his. So the Mitchelsons have all the electric current they can use.

The Tunxis house has always been famous as a place to trade horses. A whole regiment of David Harums make periodical trips to Canada and come back with "forty head," no more, no less. They rather resent the automobile, but the proprietor is glad to note a pleasant day, especially Sundays, when a row of them line up at the hitching shed. The Tunxis house dinners are famous, and have been, down the ages.

From Tariffville to Granby is a short ride. Some tortuous hills have to be negotiated, and the road is good. Part of the way the road runs through an old canal bed, the Northampton canal. When the first march of manufacture began in New England and transportation became a problem, $4,000,000 was raised to build a canal, with an outlet at New Haven. With the advent of the railroad the canal went out of business and the Northampton branch, or canal road, as it was called before it came to the consolidated system, runs on the towpath, while the highway runs in the canal bed itself. The scenery is particularly charming from Tariffville to Granby, since it is left wild and is, for the most part, unspoiled by cultivation. Granby raises important crops—33 degree politicians and jurors.

The chief feature of interest in Granby town is Old Newgate. Remaining intact is Old Newgate prison, where British prisoners of war and tories were confined in the revolution, and there is hardly a motorist in Connecticut who has not made a run to Granby to view the shops, and to make the descent down the deep shaft by a rickety ladder route to the copper mine, hundreds of feet under ground, and tunneling under a mountain side where runs an icy cold stream and where, in rough-hewn undreground barracks, the most obstreperous convicts were confined.

In the town of Granby proper there is one house in which Washington and Lafayette are not charged with spending a night. There are so many homes in Connecticut about which legend has these distinguished personages as proud guests, that the impression goes out that the first president and French court dandy sampled each habitation in rotation. Any fast car will quickly take a party from Granby to Oil City.

Windsor is famous as the home of Oliver Ellsworth, who was an early chief justice, and whose old home, typically colonial, is now owned by a chapter of the Daughters of the Revolution, and Colonel E. N. Phelps, who still lives. The motorist who runs down Colonel Phelps, who can tell you how many times removed he is from Cotton Mather, would think that Uncle Sam had stepped out of a double-page funny paper supplement. He's tall and lank and close shaven, except for a little whisker of gosh-ding-its, from out of which the honk honk of a motor horn might scare up a couple of meadow larks or a field mouse or two. Windsor, too, claims Fitch, the inventor of the steamboat, and Captain Christopher M. Spencer, inventor, who, when a boy, rode around the country described above in a steam automobile of his own making and informed the natives of Lee's surrender and the close of the war.

Windsor is on the main line of travel from New York to Boston and a stream of automobiles ebbs and flows through the town. There is a bad turn under the railroad, where a grade crossing was eliminated, where only one vehicle can pass at a time, and as escapes from serious accident have been numerous, it is known as Colonel Phelps' deathtrap, since the colonel designed it. Windsor grows tobacco and as land is worth more for crops than for building lots, its building progress is slow, despite the fact that it is one of the most beautiful of the Hartford suburbs. The run from Windsor to Hartford is over a fine macadam highway, with only one hill, Stoney hill. The run to Springfield is longer and takes cars over a fine highway through Windsor Locks, Warehouse Point, Enfield street, and Longmeadow, and by way of Pecousic hill, into Forest park and Springfield.

The Famous Old Farmington River, Which Tasted Oil Many Years Ago

Digitized by Google

O. K. ON MILITARY CAR

Germany Conducts Tests and Decides Automobile Rivals Railway Train in Speed

Berlin, Oct. 28—That automobiles will soon be used in warfare is the opinion of many motor enthusiasts in Germany, which has devoted much money to the encouragement of research for rendering the government one of the foremost in military affairs. At the instigation of the military authorities a test has been given to try the efficiency of automobiles in transporting guns and troops and the results, although experimental in a large part, serve to show, the Germans assert, that motor wagons for the transportation of troops, guns, ammunition, soldiers and even heavy pieces of ordnance will be an assured success before many years.

The test, which was principally given to try the efficiency of two-seated motor wagon as transporters of troops, was held on the country roads near Wien and manoeuvers were gone through by the troops similar to those which might be used in opposing or retreating from an enemy.

With Wein as a center, forces were distributed, lines of men thrown out and ammunition distributed. Bridges and hills were seized as vantage points and men were retired after the most approved military tactics.

As is usual with careful Germans, accurate officials took account of time and gasoline used, and of weights and measurements, and the results show that the automobile is a fair competitor with the railway is transporting troops and is far superior to the footwork of the infantry.

The first experiment consisted of a dash from Purkersdorf to Tulln between two forces, one mounted on automobiles with guns and ammunition in automobile wagons, and the other a regularly equipped force of German cavalry and infantry—two companies. Needless to say, the automobiles arrived at Tulln and took possession of all the vantage points far in advance of the enemy. Arms and ammunition were distributed and the men stationed with all the regularity of war. The distance between the two points was covered in good time in spite of the road being a little slippery from recent rains. Darracq machines were used by the troops.

The second experiment was between two companies of men provided with motor cycles, two-seated vehicles transporting wagons for ammunitions and arms and officers in automobiles. The run was between Traiskirchen and Tulln by two different routes, the one 55 kilometers and the other 30 kilometers long.

The best time made by any one of the 50-kilometer route men was 2 hours, a Bayard-Clement machine-gun automobile reaching Tulln in that time, making a little over 30 miles an hour.

The party going over the 55-kilometer route appeared in Tulln in 3 hours and 7 minutes, the 60-horsepower Mercedes machine-gun automobile leading the half-dozen scout two-seated vehicles. In the meantime the infantry was hiking along as best it could, but despite the fact it hay-footed, straw-footed to the best of its ability, it was distinctly outclassed by the speedy automobiles, which dashed over the country roads with an aggravating ease. So successful were these tests that the German officers who have advocated military motoring feel they have scored a big point over the old fogeys who can see no good in anything modern. It is believed that the trials won motoring many friends in the army.

ROYAL IN A. L. A. M.

New York, Nov. 4—The most important action taken at the annual meeting of the Association of Licensed Automobile Makers on Wednesday, news of which was not given out until after the executive committee meeting the following day, was the admission to membership of the Royal Motor Car Co., of Cleveland, O. It is officially announced that the new licensee agreed to pay back royalties on all cars manufactured since January 1, 1903.

Another change in membership was the purchase by the association of the license for manufacturing and importing held by the Worthington Automobile Co., of New York, which now ceases to be a member. The company is now interesting itself in the manufacture of steam vehicles.

The annual election resulted in the full list of incumbent officers and the executive committee being chosen for another year. These officials are: President, Charles Clifton, of the George N. Pierce Co., Buffalo, N. Y.; vice-president, William E. Metzger, Cadillac Automobile Co., Detroit, Mich.; secretary, L. H. Kittredge, Peerless Motor Car Co., Cleveland, O.; treasurer, H. H. Franklin, H. H. Franklin Mfg. Co., Syracuse, N. Y.; executive committee, Charles Clifton, George N. Pierce Co.; F. L. Smith, Olds Motor Works; E. H. Cutler, Knox Automobile Co.; S. T. Davis, Jr., Locomobile Co. of America, and M. J. Budlong, Electric Vehicle Co.

A report was received from the newly incorporated Association Patents Co. to the effect that it was now practically at work with the patents interests of the members of the association. A report from the show committee was received stating that all of the space for the show in Madison Square garden has been allotted and that artistically the show will surpass not only everything ever held in this country, but also the big spectacular exhibition of Paris.

FRANCE HEDGING

Paris, Nov. 4—Special cablegram—It is believed by those on the inside that the French authorities are somewhat shaky on the stand they have taken against racing and that there is a move on foot to hedge a bit. This belief is borne out by a story which appeared in the Figaro yesterday, which stated that it is probable that a speed race will be run over the Auvergne course next year by the Automobile Club of France. This is expected to lead into developments which may result in France not only defending the Bennett trophy, but the Vanderbilt as well, despite its announcement that it washed its hands of the racing game.

TOUGH TRIP TO COAST

Chaydeane's Motor Cycle Ride Across Continent Marked by Rough Going and Tumbles

Buffalo, N. Y., Nov. 8—Members of the Buffalo Motor Cycle Club are rejoicing over the feat of their captain, William C. Chaydeane, who has succeeded in smashing the transcontinental record for motor cycles, having crossed from New York to San Francisco in 47 days 23 hours 50 minutes, beating the old record of 51 days. Chaydeane reached his destination October 31, after a strenuous trip, on a 1906 model 44 Thomas Auto-Bi, covering over 4,000 miles of mud, dust, prairie, sage brush and snow. He met with accident after accident, escaping death many times by a narrow margin. He plugged along, day after day, with insufficient sleep, very frequently going 2 or 3 days without a square meal. He left New York city September 30. He was up against it from the start, expecting to leave New York on a Monday, but was delayed by the express company until Wednesday. As he stood before the rooms of the New York Motor Cycle Club, the rain was pouring down in torrents. The grasp of a hand from some of the members who were present, a goodbye and good luck from R. G. Betts, president of the F. A. M., who pinned the emblem of the federation on his flannel shirt, and he was off. From New York to Albany he found fairly good going. Apart from a few punctures he had no particular difficulty, except during the second day, when the rains had made the roads extremely treacherous, and in one slippery place he pitched into a ditch and suffered his first bad spill. From Albany to Buffalo he found nothing but mud and rain. He reached Buffalo about 1 a. m., having encountered a seething torrent of rain just outside of Rochester. From Buffalo to Erie he found good roads and he thought that at last his luck had turned, but by the time he had reached Cleveland, outraged nature had begun to take a hand in the game, and he was compelled to go to the hospital, owing to a severe indisposition, brought on by exposure and irregular meals. The doctors told him that a rest was imperative, but he left the hospital, tightened up a couple of loose nuts on his wheel and started west.

Chaydeane eventually reached Chicago, but here he met a friend who compelled him by sheer force to lay off for 24 hours and go to bed. This rest, together with some attention to his trouble, put him in better shape, and from Chicago westward he was feeling much better. He was averaging nearly 100 miles a day, but owing to occasional mistakes as to the right road his mileage was necessarily much greater than if made by rail. He finally reached the vast prairies of the western country, and from Omaha on his trip was marked almost daily by incidents of the most varied nature, sometimes humorous and sometimes almost serious. The conditions of the roads, in many cases covered with sand and mud, the steep grades, and the almost daily spills served to delay his

Digitized by Google

journey. For 3 days he remained at Ogden, tied up by a snow fall which made the roads simply impassable for a two-wheeled machine. Spills were so ordinary that when at one place he ran foul of a snow bank at the foot of a hill and pitched over a 30-foot embankment, his first question to the cowboys who picked him up, after being unconscious over an hour, was as to the condition of his machine. After a little vigorous treatment with a crowbar and a couple of wrenches, which he took from a nearby threshing machine, he managed to bend it back into shape, so that the wheels would turn. Mounting again, he bumped over the rocky road to Ocho, and finally reached Ogden, after riding nearly all night.

PORTLAND AFTER GOOD ROADS

Portland, Ore., Nov. 6—The Portland Automobile Club has begun a good roads campaign that is to be carried on strenuously during the year 1906. There will be no lack of money to push it. At a meeting of the club at Claremont tavern it was decided to apply to the Multnomah county commissioners for improvement by the county of 10 miles of the Linnton road, extending from Portland to Claremont, the club entering into a contract with the county to keep the road oiled and repaired at the expense of the automobilists. A continuous effort is to be made by the club to stir up interest in automobiling, improve the beautiful roads about Portland, and add to the number of high grade cars in commission here. All the automobiles in this city have been bought within the last 2 years, but only a few are of the powerful four-cylinder type. There are now 200 machines, and more than 125 of them have been bought this season. The Lewis and Clark exposition did not do much for encouragement of automobiling. No automobiles, bicycles or horses were allowed in the grounds. Only one local dealer made an exhibit at the exposition. The activity in the automobile business in Portland this year is due to the hustle and pluck of the dealers.

HINTS OF FRENCH DEALS

London, Oct. 28—It is said that preparations are in progress here and in France for the flotation of the Panhard & Levassor and Darracq companies, but nobody has been able to break through the official reserve so far as to get either confirmation or denial. One would not be surprised to hear that Darracqs had decided to get the public's support, for the firm has found its way into the hands of capitalists who must have acquired it with that eventuality in view; but that Panhard & Levassor should be designing such a move is an eloquent indication of the opinion of its owners. People don't sell such businesses until they think that high-water mark has been touched. Panhards will be over-subscribed. That is certain, but all the same we may take it for granted that those who are now running it think that the French motor-car industry has very nearly reached its zenith. Panhards would float easily at $5,000,000, but in all probability the conversion will not be a simple one of transferring to the public entire proprietorship.

IS HUB DEEP IN DUST

Megargel Finds Oregon Roads Must be Navigated Carefully on Transcontinental Tour

Drewsey, Ore., Oct. 30—Four hundred miles more and Portland! This to an eastern reader, surrounded by good or fair roads, sounds easy, but as I sit here and gaze at the mountains that surround Drewsey, mountains that require, in many instances, 10 and 12 hours to drag up wagons of supplies, I know that it is rather more than 2 day's run to the Keats' garage in Portland, and think that the Reo Mountaineer will be making good if it negotiates the distance in a week. It takes a freighter 11 days to make the run from Ontario to Burns, 150 miles. This will give an idea of how hard a pull it is through the Blue mountains of Eastern Oregon.

Rain visits Oregon—that is to say, the eastern section of the state—at rare intervals. In the western section it is all rain, or, at least, so much so that the people residing in Portland are said to have web-feet. Just at present there are about 10 inches of fine alkali dust on road and trail. In some places, where there are the remains of mud holes, the dust is 14 to 20 inches deep and so fine that an automobile tire sinks the entire distance, until it rests on the solid ground. The greatest care has to be exercised in driving over this road, as to sink into one of the dust holes means the stranding of the car and sometimes an hour's work with jack and spade to get it out.

The weather is all that an automobilist could ask for—cold in the mornings, but warm and comfortable driving after 11 o'clock, when we usually strip off sweaters and outer jacket. The roads are well laid out and the majority of creeks are bridged. The grades are evenly divided all the way to the top of the mountains, and then we coast until brake bands are burning.

At Boise City, Idaho, just prior to our starting off, we ran into L. L. Whitman, the record-holder. Whitman and I have been reading each other's doings for the past 3 years and it is needless to say that we had a good half hour together, comparing notes. Whitman has made the trip from the Pacific to the Atlantic twice. This will complete the second trip I have made from the Atlantic to the Pacific, so we found much to talk about, as our routes for the greater part of the distance, lay over the same course. Accompanying Jim Taylor, in the latter's Franklin, Whitman ran out 15 miles toward Ontario with the Reo Mountaineer and then wished us good luck.

Anyone traveling over this section in an automobile cannot help but be struck with the excellent opportunity for some automobile enthusiast to bid in the stage line running from Ontario to Burns. The United States offers this mail route to the lowest bidder, with certain stipulations, every 4 years. It will be awarded again this fall. Every 15 or 16 miles along the route are stage stations, where the horses are changed and the mail is carried through from Burns every 24 hours. Burns is situated 150 miles from Ontario, the nearest railroad point. Enough money can be secured for carrying the mail to pay expenses of running the automobile stage line, and carying passengers would all be velvet to the promoters.

Gasoline can be had from every little store along the route, as I found out from my last trip, although to take no chances I started out from Ontario with 25 gallons. At Vale, Westfall and Drewsey, gasoline can be secured, although the further west we travel the more gasoline costs, as the freighters charge in the neighborhood of 2 cents a pound for everything brought into Burns.

Owing to the fact that we are obliged to use our low speed so much in the mountain climbing, we have been running nights, or until 2 o'clock, ever since entering Oregon. Our Dietz searchlight enables us to follow the dangerous mountain trail with perfect safety, lighting up the narrow pathway, until rocks and alkali pits are as plainly shown as by sunlight.

Our Mobiloil, shipped to different points along the route by the Standard Oil Co., has never failed us, nor have we experienced the slightest trouble from our engine or transmission, both of which we keep well flooded at all times.—PERCY F. MEGARGEL.

FIRE IN APPERSON PLANT

Kokomo, Ind., Nov. 7—Special Telegram—Apperson Brothers' automobile plant was attacked by fire during last night and the old original frame building, the first floor of which was recently vacated as a machine shop and turned into a junk room, and the offices located on the second floor suffered practically total destruction. The flames, however, were confined to this building, which was only two stories in height, and to the one-story brick building just back of it, which was formerly used as stock room, and to the blacksmith shop, where the damage was only slight. Mr. Apperson states that the loss is covered by insurance and that the delay, so far as getting out the company's product is concerned, will be very slight, inasmuch as practically everything of value had been moved out of the departments which were destroyed, to the new building upon its completion a short time ago.

TALKS CRANKSHAFTS

New York, Nov. 6—Crankshafts and their bearings were the subject of discussion at the November meeting of the mechanical branch of the Association of Licensed Automobile Manufacturers, held last Wednesday. Various members of the organization, superintendents from the factories of representative manufacturers, exhibited drawings of their crankshaft construction and after giving all the dimensions, telling the pressure on the bearings, the material used, methods of construction, of lubricating, etc., answered such questions as the others chose to put. The subject for the December meeting will be the best method of inspecting and testing cars, so as to be certain that they are all right before shipping them from the factory to the branches and agencies.

Digitized by Google

MOTOR AGE

New York Office 29 West 42d Street
London Office—American Publication Bureau 58 Manor Park Road Harlesden, N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the Trade Press Co. N. H. Van Sicklen Manager. Telephone Harrison 4410

Member National Association of Automobile Manufacturers, Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year. Foreign subscription four dollars
The Western News Co. of Chicago and its branches supply newsdealers. Entered at the Chicago postoffice as second class matter

AUTOMOBILES AND FREIGHT RATES

WHILE President Roosevelt is endeavoring to bring the railroads to time over the question of freight rates, the automobile is going ahead, regardless of red tape, showing the world how easily and how cheaply it can haul passengers—and if passengers, then freight—at a rate per mile far below what a railroad asks and receives. By the time congress and the president and the railroads have come to any sort of an understanding—mutually or forcibly—the motor car will have made such strides before the commercial world as to force the railroads to do what all other means have failed to do in the history of the country.

Just what railroads can afford to do in the matter of cutting rates for hauling passengers or freight and just what they will do are two matters that differ considerably just now, but a few short years hence what they can do and what they will do will be nearer the same thing, if the automobile keeps on making the record it has been making during the past few years.

The recently finished economy test has opened the eyes of the commercial and traveling public and if railroad officials have studied the matter they must have received a jolt of no small proportions. Outwardly these officials will never admit this; inwardly they will set about to head off the avalanche that will soon engulf any movement that may be the means of taking away any portion of their business.

One motor car carried a load of passengers at a cost of 4 mills per mile per passenger; it could have carried 150 pounds of freight at the same rate; in fact, it could have carried more than this amount of freight.

There is no immediate danger that the motor car will interfere with the railroads in the matter of passenger or freight business as far as long hauls are concerned, but in matters of short hauls the day of the steam locomotive on steel rails is doomed, and the trolley, too, will have a competitor up to which it must look.

The motor car will not be a factor in long hauls, or even in middle distance hauls, until some improvement has been made in highways, but that will come as fast as the motor car goes on showing such remarkable work, and as fast as the highways receive improvement, then just so fast will motor cars become thorns in the sides of the railroads.

In earlier days canals were established as a means of holding the railroads down to legitimate and reasonable freight and passenger rates, but the canal boat succumbed to the progressive locomotive, whose one weapon was speed, notwithstanding increased carrying charges. The motor car has already proved the locomotive's foe in the matter of speed, so that in this respect it is not handicapped, as was the canal boat. Now it is gradually creeping up on the locomotive in all ways and has already passed it in point of economy.

Although speed is a large factor, dollars and cents count for everything in the commercial world. The motor car, with its already marvelous speed and its economy of operation, must, then, become the locomotive's rival in the world of commerce.

The motor car has its drawbacks—it is not a perfect piece of mechanism—but it is young and is making headway. It is not blessed with a smooth track upon which to travel, but it is not handicapped by extensive costs for rights of way, track and roadbeds. It must, it is true, depend upon the public highway for its track, and the highways must be far better than they are now if the motor car is to perform its function of regulating railroad freight and passenger rates.

Like all new things, there will be some opposition to such a use of the public highways, but it must be remembered that it is as reasonable for the motor car to transport freight and passengers over the highways as it is to haul corn and wood and other necessities over them in horse-drawn vehicles, and that it can be done cheaper and quicker than by horses and as quick and cheaper than by the locomotive. It must also be remembered that the citizen is receiving the benefits and not the Wall street system, and when this is recalled the public will too willingly give its consent to the use of highways by motor cars.

The system will be busy for a few years to come with its own affairs and may not give heed to the advance of the motor car until its influence shall have begun to show on the earnings of the railroads. Then the system will sit up and wonder. It will be futile to try to head off the motor car—it is now too well established and too much of a necessity to be driven out of the commercial field—and the system, being made up of wise minds, will probably climb into the band wagon. As the great American people stamp approval of the motor car, that much faster will good roads come.

The economy test of the New York Motor Club was little thought of a few weeks ago; a short time hence it will be a topic that will cause more thought on the part of the commercial world than any act congress could perform in the matter of passing freight-regulating bills. It will have set the entire world to thinking—railroad owners and officials, the merchant and citizen, the motor car manufacturer. The latter will for a time devote himself to study in order that the defects found to exist in motor car construction—and it must not be supposed that none was found through this test—may be remedied and that another test may prove more satisfactory than this one.

There will be an effort on his part toward making the motor car what it must eventually be—the balance wheel of the railroad, if it does not go further and surpass the latter as to trade places with it entirely. It will bear watching, this little giant of the road, not by the constable and the dinky little municipal official, but by the selling public and by the buying public.

EARLY SAMPLES AND THEIR EFFECTS

BY THE time the automobile shows have come and gone the manufacturers of automobiles who have waited until the last moment to produce their new models will have learned the wisdom in the story of the early bird and the worm. Those makers who already are out with their samples will have practically sold their outputs ere the shows take place. Some of the agents who would have attended the shows will remain at home, for, having selected their lines and placed their orders, they will secure better results by staying home and selling what they have contracted for rather than waste time and money going to shows. As it is, the late makers will take what is left in the matter of agents and it is by no means certain that what is left after the plate of apples has been picked over is worth taking.

The modern manufacturer has no fears of a rival stealing his ideas. He knows he is original and that originality will be appreciated; that as long as he builds good cars, marked with improvement from season to season, he need not suffer in the matter of sales. The late maker will have learned before another season passes that he must have his models out as early as his neighbor, and the result will be that all will be on the market long before the previous year's models have ceased to run under sunny skies. With all producing cars at such an early date, it means that earlier shows will be forced upon the maker and the public, and that the selling season, instead of beginning in the spring, will open at the dawn of winter and will not be hindered by cold and snow.

From all evidence that is at hand it would appear that the early show is soon to come, that the late maker will be unknown, and that the man who wants a next season's car can have it long before the season arrives.

Digitized by Google

JUMP SPARKS

Now let the railroads hold an economy test if they expect to meet the automobile on common ground.

* *

The czar of Russia seems to be having about as tough a time with his subjects as is the mayor of Chicago with the windy city motorists.

* *

After all, France has changed its mind and will hold a big road race, which suggests that some one did remark that there was a little bluff left in the land.

* *

It is at least a little satisfactory to automobilists to know that the scarehead of the daily press has been forced to the ball instead of automobiling, even if it will be for only a month or two.

* *

It isn't true that Senator Depew is to run an automobile express line next year on the Hudson river this winter. The senator is absorbed in the ocean beaches, and, besides, he has one or two to discover before he finds anything else.

* *

Mayor Dunne of Chicago had a little taste of what motorists receive too frequently, when, in starting on a speech-making trip in his automobile, the axle of the machine struck a sewer cap and was temporarily wrecked. This ought to suggest things to Chicago's chief executive.

* *

The best evidence of the popularity and utility of the automobile is its growing use on the part of the chiefs of police and other municipal department heads all over the country. The only trouble is the automobiling policeman now has a distinct advantage over all other scorchers, which is somewhat unfair.

* *

With all the election returns are in the automobile will come in for its share of glory as a campaign adjunct.

* *

This is the sort of weather that causes one to forget he has a water-cooled motor until after the bill for new cylinders has been received.

* *

By the time the foreign makers have studied the result of the recent economy test here, they will have received another jolt to their think tanks.

* *

There's a good deal of doubt as to what will happen to that New Jersey automobile license law after the lawyers and the courts get through with it. It ought to be pretty well picked to pieces.

* *

Judging by the quantity and quality of motorophobia that has existed the season through, one may well fear the assembling of the various legislatures the coming winter. The anti-motorists will be there with a good many feet.

* *

In forty-five counties in Illinois, Iowa, Michigan, Indiana and Wisconsin, where county fairs and street carnivals were held, seventy people were injured, some of them being performers and others occupants of horse-drawn vehicles. For once the automobile was not to blame.

* *

Whatever mean things may be said about automobiles and automobiling, automobiles tend to teach patience, self-restraint and forebearance. Ask the man who has wrestled with a balky motor, repaired punctured tires or has run up with [illegible] automobile regulations *per se* [illegible] automobile officials all over the country.

THE WEEK IN BRIEF

William C. Chaycraft's feat of covering 1,000 miles on motor cycle in 47 days 7 hours 47 minutes arouses admiration of Buffalo cyclists over feat of their fellow townsman.

So many applications received for space at Chicago show that Manager Miles is forced to delay announcement of allotment for another week.

Germany tests military cars and outlines automobile for military use, declaring it to rival railway in point of speed and usefulness.

Jap Clemens, in a National, smashes 100-mile truck record at Indianapolis, doing the distance in 1 hour 53 minutes 21 4-5 seconds.

Percy Megargel fights dust in Oregon but says that last 400 miles into Portland is going to be far more strenuous than it seems.

Belief in Paris that Automobile Club of France will promote race over Ardennes circuit next year.

Red omnibus wins economy test of New York Motor Club, with Reo runabout second.

Scorching Motorists Out of the Glare of the Searchlight of the Daily Press During the Football Season at Least

Digitized by Google

REO BUS WINS ECONOMY TEST

ALONG THE HUDSON EN ROUTE TO ALBANY

NEW YORK, Nov. 6—All of the original entrants in the New York Motor Club's 6-day economy test took part in the final stage of the journey from this city to Southampton, L. I., and back. Compound No. 5 had been the victim of a series of mishaps. It had stripped a gear on the way to Philadelphia the first day, secured a new transmission from the factory and started again, only to plunge into a ditch in the darkness and break an axle sleeve. It was on hand, though, for the run to Albany, but at Cold Spring it went into a fence, through its brake giving away on a down grade. The decision of the judges gave the honors to the Reo bus, with the Reo runabout second. The bus averaged 4 mills per mile per passenger, carrying ten.

Just out of town on the run to Albany the gear of the Frayer-Miller went to the bad, necessitating a return to the city. A new transmission was wired for and shipped, but it failed to arrive in time to cover the Albany stage by night running, as was contemplated.

The run to Albany and back included a somewhat strenuous struggle, with bad hills, strange roads and darkness, on the outward bound trip, yet the 150 miles were covered in time around 10 hours. The voyagers profited by experience on the run home, made a start nearer to 7 o'clock and beat the outward bound time by at least a good full hour.

The run to Southampton and back, over good roads and level all the way, barring the short stretch through the Shinnecock hills, was a cinch. On the homeward trip most of the cars reached the final garage somewhat before 5 o'clock in the afternoon.

RESULT OF THE ECONOMY

No.	Car	H. P.	Passengers	Gasoline
3	Reo bus	16	10	$16.00
4	Reo runabout	8	4	7.99½
6	Compound	15	5	10.87½
9	Wayne	20	5	12.40½
8	Olds	8	4	10.35½
7	Compound	15	4	10.34½
2	Marmon	20	5	14.82½

The total journey aggregated 682 miles, made up of round trips of 202, 300 and 180 miles, to Philadelphia, Albany and Southampton, respectively. The aggregate of $14.53 car fare per passenger was, of course, badly beaten by the automobiles, whose average cost per passenger ran from $2.93

EASTERN MILLIONAIRES ARE SPEED MAD

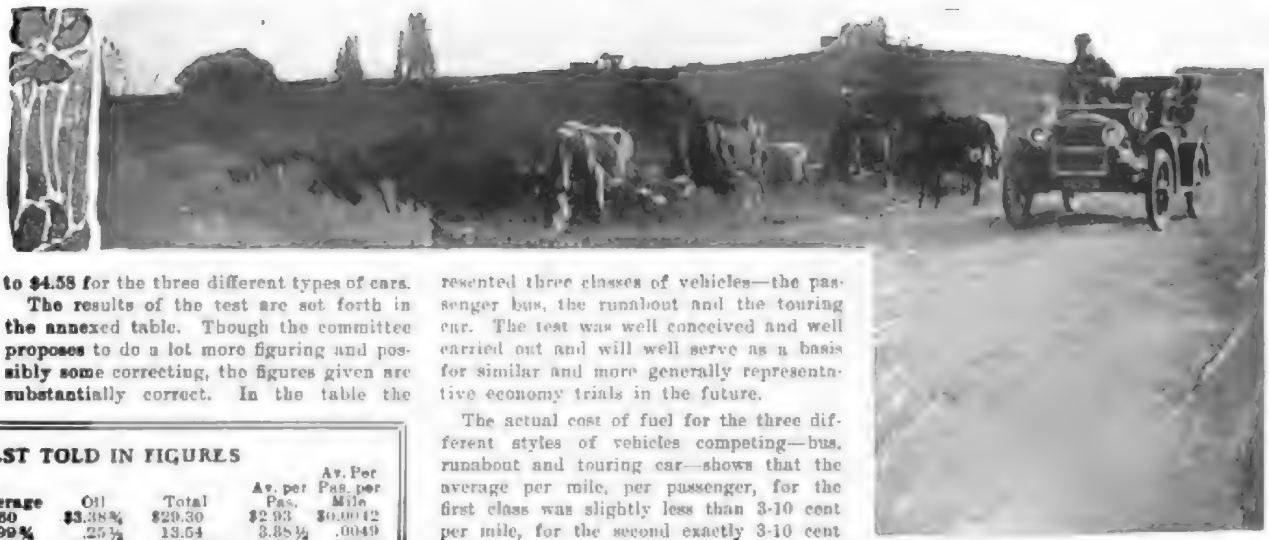
New York, Nov. 6—Senator Morgan's 2-miles-a-minute race at the Florida meet has set the racing world aflame. The talk of the trade identified with the racing game is now all of great speed creations to be built to capture the star event of the annual tournament. Millionaire racing enthusiasts are already looking about for cars with high speed records. As was to be expected, there was a jump for the 110-horsepower Fiat, which Lancia drove in the Vanderbilt race at an average rate of over 70 miles an hour for over 200 miles of the running. George W. Young, a broker, new to the racing game, has secured it. He has already engaged Harry W. Fletcher, who won the Vanderbilt 100-mile contest on the beach last year and also scored world's road records in Cuba, to drive it in the Ormond-Daytona, the Palm Beach-Miami and the Cuban races.

ON THE NEW YORK ECONOMY TEST RUN—ALONG THE HUDSON AT DUSK

Senator Morgan makes light of a cable from Havana printed in the Herald to-day, which hints at the possibility of the abandonment of the Cuban carnival unless a subscription of $14,000 to defray expenses be forthcoming. As is well known, last year's race entailed a heavy loss, which was met personally by Senor Conill, president of the association, whose car won the Havana cup. The senator had a conference with Senor Conill on Saturday, at which the Cuban sportsman promised a personal subscription of $2,000. Next year's race will be 200 miles, four times over the 50-mile stretch between Arroyo-Annas and San Christobal. The road will be oiled to a width of 15 feet. The grand stand is to be erected by outside speculators and will be commodious.

Senator Morgan had a conference with his advisers today, at which the programme for the Ormond-Daytona meet was finally determined. No change in the events already announced was made, but to the card were added two events open to amateurs under the A. A. A. definition—a 10-mile Corinthian championship and a 10-mile amateur handicap. The entry blanks will be issued early next week. The card, as finally made up, will consist of nineteen competitive events and time trials at a mile and a kilometer. The 2-mile-a-minute race, however, will also be run in the form of flying start time trials and will be starred as the feature event.

Digitized by Google



Economy Test Car on Southampton Road

to $4.58 for the three different types of cars.

The results of the test are set forth in the annexed table. Though the committee proposes to do a lot more figuring and possibly some correcting, the figures given are substantially correct. In the table the difference between the total cost and the total fuel charges will represent ferry charges for a total of six crossings added to the charges for mechanical adjustments and replacements and tire repairs.

TEST TOLD IN FIGURES

Average	Oil	Total	Av. per Pas.	Av. Per Pas. per Mile
$1.60	$3.38¾	$29.30	$2.93	$0.0042
1.99¾	.25½	13.54	3.38½	.0049
2.17½	2.12	18.62⁷/₁₀	3.72½	.0054
2.48	2.10	19.81½	3.96⁷/₁₀	.0058
2.59	.42	15.86	3.96½	.0058
2.83½	2.13	17.18½	4.29⁵/₈	.0062
2.96½	1.40	22.91½	4.58⁵/₁₀	.0067

Though the results are based only on the performances of seven cars, these cars represented three classes of vehicles—the passenger bus, the runabout and the touring car. The test was well conceived and well carried out and will well serve as a basis for similar and more generally representative economy trials in the future.

The actual cost of fuel for the three different styles of vehicles competing—bus, runabout and touring car—shows that the average per mile, per passenger, for the first class was slightly less than 3-10 cent per mile, for the second exactly 3-10 cent and for the third 4-10 cent per mile. When it comes to a ten-passenger bus, traveling at slightly less than 3 cents per mile for gasoline and oil, and maintaining this average for 682 miles over various country and city roads, the anti-motorists had better get their pencils and paper out and see where they get off with their single or double horse outfits.

The prospective buyer of a runabout machines can find solace in such figures as $8.25 for fuel and oil for carrying four passengers 682 miles. When dissected, these figures place the fuel cost per mile for the four passengers at 1⅛ cents, from which it can be deduced that the ordinary citizen in a large metropolis, who has to go 8 miles each morning to his business office and home as many at night, can do this at a daily outlay of 19 cents, having the privilege of carrying three of his friends with him for the same expense.

PLAN TO EXTEND CHICAGO'S BOULEVARDS

Chicago, Nov. 7—The windy city is already noted for its magnificent park system, but if the additional improvements now talked of are put on it will improve this system of boulevards until it will be without a peer. For some time a movement has been on foot to link the pleasure highways of the three divisions, but it was not until last week that an official estimate was received. A commission of experts, consisting of J. W. Cremin, F. D. P. Snelling, W. E. Casselman, Albert Schoenbeck and Robert H. Bulkley, reported to the board of local improvements that in its opinion it will cost $8,000,000 to link the boulevards. It is figured that the damage to property and condemnation proceedings will amount to $4,392,001, that a new bridge across the river at Rush street will cost $1,500,000, while an equal sum will be required to cover the purchase of leaseholds, construction of a retaining wall along Central avenue, reconstruction of pavements, sewers, basins, lighting systems, etc.

The board will hold a public hearing early in December on the proposed condemnation, at which the whole subject of the boulevard link will be debated. The question of undertaking the improvement then will be taken under advisement by the commissioners.

The district to be assessed for the expense of the improvement is fixed by the experts as the territory extending from North avenue to Thirty-third street along the drive and in its immediate vicinity. The boundary on the south, the Thirty-third street boulevard, furnishes an outlet for the entire south park system through Grand, Oakwood and Drexel boulevards, and for this reason the experts fixed this limit. The value of the land to be condemned between the river and Ohio street is placed at $311,454, while that between the river and Randolph street is valued at $2,242,116. The assessment for this on the north side will be spread upon all lots and blocks lying between North avenue and the river, both sides of State street, and on Lake Michigan and will be 37½ per cent, or $957,590, for the land alone. It will be borne by the property owners of this district. On the south side the assessment for the land value will be 62½ per cent, or $1,593,980.

The Reo Bus, Winner of the New York Motor Club's Economy Test

Digitized by Google

CLEMENS DOES REMARKABLE CENTURY

THE TWO NATIONAL CARS, WITH CLEMENS AND MERZ UP, ON THEIR NECK-AND-NECK STRUGGLE AT THE SIXTY-SECOND MILE

INDIANAPOLIS, IND., Nov. 5—To the National car, driven by Jap Clemens, belongs the honor of smashing to flinders the best authenticated record for 100 miles. It was no racing machine that performed this stunt—just a stock car stripped of some of the surplus weight, which made the century in 1 hour 53 minutes 21⅘ seconds, as against the mark of 1 hour 56 minutes 39 seconds credited to Guy Vaughn in his 1,000-mile drive on the Empire City track last June. This performance was made yesterday at the Fair Grounds in a competitive drive designed to put up a mark which would demonstrate thoroughly the capabilities of the automobile at going such a distance at top speed.

Those who saw the performance marveled at the regularity with which Clemens reeled off the miles. Beautifully handled by the veteran, the National ripped off mile after mile like a chronometer, never varying, with one or two exceptions, more than a minute at any stage after the first mile, the average for the century being 52.9 miles an hour. Naturally the first mile was the slowest, Clemens taking 1 minute 19⅘ seconds to make the oval. Then he settled down to work and the time sheets show him as having run with great regularity the rest of the distance. His slowest mile after the first was the eighty-fourth, which was done in 1 minute 14⅗ seconds, while the fastest was the ninety-eighth, which was done in 1 minute 5⅕ seconds.

Five cars started in the test—two Nationals, a Premier, a Marion and a Maxwell. Charles Merz, in the other National, took the lead at the start and cut out a merry clip. Clemens kept his eye on the lad and stayed within striking distance. Merz showed great skill and remained in front until the eighty-third mile, when the officials called him off to put on a new tire. This cost him 5 miles, but he gamely started again, but he had hardly gotten under way before the new tire slipped from the wheel and car and driver crashed into the fence. He was going 53 miles an hour at the time, but he luckily escaped injury. Two of the others were distanced much earlier than this, Fred Tone, in a Marion, quitting at 13 miles; Frank Moore, in a Maxwell, lasted a little longer.

This left only Clemens and Ray McNamara, in a Premier, but the National man was never in danger. He was miles in front and coached by those who were pulling for him to do something in the record line, he carefully rated his car along with the sole object of putting up a century mark that would take a lot of beating. His engine was going along without a skip and there was every indication that he would be successful. Starting in on his last 5 miles, he did the ninety-sixth in 1 minute 6⅘ seconds. The next round he slipped back a bit and the watches showed 1 minute 8 seconds. Then he whooped 'er up and the result was the fastest round of the entire performance, the mile being done in 1 minute 5⅕ seconds. The ninety-ninth was in 1 minute 7⅕ seconds and the 100th in 1 minute 7⅘ seconds, Clemens coming in on the bit, as the horsemen present expressed it.

Struggling far in the rear was McNamara, so far behind that it reminded a yachtsman in the stand of the first race sailed for the America's cup, when an English lord reported to the queen that the Yankee boat had won. "Who was second?" asked Victoria. "There is no second, your majesty," reported the courier. McNamara, though, did well and would have been in the limelight had it not been for Clemens' record feat. He did his century journey in 2 hours 15 minutes 31⅘ seconds.

"That certainly was one of the smoothest performances I ever witnessed in the motor line," said a tradesman who was present at the trial. "There those two Nationals went along mile after mile, Merz leading by not more than 30 feet at any stage and often the two were running tire and tire. It was decidedly unfortunate that the tire incident occurred, otherwise one or the other would undoubtedly have clipped off several more minutes. With Merz put hors du combat in the eighty-third mile, Clemens was without a pacemaker just at a time when he needed it most. Whether or not Jap would have won is doubtful, for the youngster certainly showed great skill in handling his National. On the other hand, Clemens displayed discretion in the handling of his car, and I never saw such excellent judgment of speed shown when in an affair of this kind.

"The performance of the Premier car in the 100-mile contest was especially praiseworthy, despite the fact that it finished second to the National. The Premier in this event is only a runabout—a 16-horsepower car that ran with remarkable regularity. So far as can be ascertained the engine went the full century without a skip or a break of any sort. While the 40-horsepower National gathered in a world's record for 100 miles, the Premier people file a claim for a record themselves, asserting that 2 hours 15 minutes 31⅘ seconds, the time made by their runabout, is a mark never before reached by a car under 20 horsepower.

"The average speed of Clemens' National was 1 minute 8⅕ seconds per mile and you will notice, by looking at the sheet, that two of the miles were much slower—one nearly 1 minute 20 seconds and the other just inside 1 minute 15 seconds, so you see he had to make up quite a bit of lost ground to get the average he did.

"The National that did the trick was a 40-horsepower machine and the track an ordinary oval used for horse racing. Going nearly a mile a minute, you can appreciate how well the car ran when you consider the turns which

JAP CLEMENS IN THE NATIONAL JUST AFTER THE FINISH

Digitized by Google

bobbed up just about the time Clemens would get to going in the straight. I consider his performance one of the best in the record-breaking line we have had this year. Clemens is comparatively unknown as a driver. He was once prominent in the cycle trade and has always been an athlete, being especially expert as a football and polo player. Merz is only 19 years of age."

SANCTIONS TO BE SCARCE

New York, Nov. 6—At a meeting of the executive committee of the National Association of Automobile Manufacturers, last Thursday, it was decided to limit the sanctions for local shows to those cities in which shows were held last year, and to make it only on the condition that the proceeds of such shows must go to organizations of local dealers. Such local organizations must admit all reputable dealers who have been such for at least 1 year upon the same basis as all other members, and the dealers must not call upon the manufacturers they represent for financial assistance in the conduct of their exhibits.

C. G. DINSMORE DEAD

New York, Nov. 8—Special telegram—Clarence Gray Dinsmore, third vice-president of the Automobile Club of America, died today of pneumonia after a brief illness. Mr. Dinsmore was also foreign representative of the A. C. A. and an enthusiastic follower of international road racing, Jenatzy driving his Mercedes in the Bennett race in Ireland.

MORGAN GOES SOUTH

New York, Nov. 8—Special telegram—W. J. Morgan will leave New York tonight for Florida to arrange for the automobile exhibit at the Jacksonville pure food and industrial exposition, January 4 to 18, and will also go to Daytona for the purpose of putting up of new timing wires on the Ormond-Daytona beach.

SHOW IN FATHERLAND

One Hundred and Fifty-Four Firms Occupy Spaces in Frankfort Motor Car Exhibition

Berlin, Oct. 26—The Frankfort motor show is now on, 154 firms occupying spaces. Among the most prominent is the Daimler company, with machines ranging from racing cars to vans, including an omnibus carrying thirty-two persons and 1 and 2-ton delivery vans. The Neue Automobile-Gesselschaft, familiarly known as the N. A. G., and a sister company to the British General Electric Co., shows, in addition to 10 and 20-horsepower cars, a couple of heavy vehicles and an army tractor with trailer. The features of the N. A. G. line are the round form of radiator and few hand and foot levers. The Durkoop company has everything from a small, light car to a giant van. The Gernsbach omnibus, which starred in the recent van and omnibus trials of the Automobile Club of Germany, is shown by the Suddeutsche Automobil-fabrik, of Gaggenau. This concern is using a lighter superstructure and the 16-horsepower phaeton has a detachable roof, which may be replaced with a summer one. It also has a light model using friction-drive. The Schiebler people of Aix-la-Chappelle, have a motor omnibus.

Exhibitors from outside Germany include the German De Dion-Bouton Co., the Turin Itala Co., the Societe Anonyme des Ateliers Germains-Monceaux sur Sambre, and the Puegeot concern.

Tires are well represented, the Simplex especially being in the limelight with the tire that can be mounted instantaneously on a patent double felloe. The Continental people are in line as usual, as are the German Rubber Tire Industry, Louis Peters, Albert Calmon & Co. and Dunlop Tire Co., who all have magnificent displays.

The Argus Motor Co., of Berlin, displays a chassis with chrome-nickel steel axles and the 1906 models show a new spring suspension, the upper back springs consisting of laterally-curved half-springs set in the frame ends.

COLUMBIA CHANGES

Hartford, Conn., Nov. 6—Many radical changes will be found on the four-cylinder 1906 Columbia. The ignition is make-and-break with magneto current. The cylinders are cast in pairs, but appear to be individual, the middle section being of aluminum. Lubrication of the crankshaft bearings is by means of a rotary gear pump, the oil falling to a reservoir below the crankcase. The supply is sufficient for 400 miles of travel. The drive is by a telescoped shaft. The forward axle is I-beam construction and the rear axle set consists of a fixed tube containing the live axle, the weight of the car being borne by the axle housing. While a car of medium power was designed and while the rating is said to be placed at 24 horsepower, tests have put the power higher.

OLDSMOBILE REUNION

New York, Nov. 8—Special telegram—The reunion of Oldsmobilists in celebration of the fifth anniversary of the introduction of the little curved front runabouts in this city was the election day event in motordom. The idea, which was the conception of Roy D. Chapin, of the Olds Motor Works, and General Cutting, the company's local representative, made a big hit and will probably be a forerunner of similar reunions of drivers of Oldsmobiles and perhaps other makes in this city and throughout the country. Around noon time the avenues and streets in the neighborhood in upper Broadway swarmed with curved front runabouts and other cars of the genus Olds. When they were all drawn up in a double line on Fifty-first street they reached from Broadway to Eighth avenue.

NEW 100-MILE FIGURES MADE BY CLEMENS IN A NATIONAL

Miles	Elapsed Time H. M. S.	Time Single Miles Min.
1	1:19 2-5	1:19 2-5
2	2:28	1:08 3-5
3	3:36 2-5	1:08 2-5
4	4:44 1-5	1:07 4-5
5	5:52 1-5	1:08
6	7:00	1:07 4-5
7	8:08 1-5	1:08 1-5
8	9:16 2-5	1:08 1-5
9	10:25	1:07 3-5
10	11:31 3-5	1:07 3-5
11	12:39 1-5	1:07 3-5
12	13:46 2-5	1:07 1-5
13	14:53 1-5	1:06 1-5
14	16:01 2-5	1:08 4-5
15	17:08 4-5	1:07 2-5
16	18:16 3-5	1:07 4-5
17	19:25	1:08 2-5
18	20:32 3-5	1:07 3-5
19	21:40 1-5	1:07 3-5
20	22:48 2-5	1:08 1-5
21	23:56 1-5	1:07 4-5
22	25:04	1:07 4-5
23	26:12 2-5	1:08 2-5
24	27:20 4-5	1:08 2-5
25	28:28 2-5	1:07 3-5
26	29:36 2-5	1:08
27	30:44 3-5	1:08 1-5
28	31:52 1-5	1:08 3-5
29	33:00	1:07 4-5
30	34:08	1:08
31	35:15 4-5	1:07 4-5
32	36:23 4-5	1:08
33	37:31 4-5	1:08
34	38:40	1:08 1-5
35	39:48 2-5	1:08 2-5
36	40:57 4-5	1:09 2-5
37	42:05	1:07 1-5
38	43:12 4-5	1:07 4-5
39	44:21	1:08 1-5
40	45:28 3-5	1:07 3-5
41	46:36 2-5	1:07 4-5
42	47:44 1-5	1:07 4-5
43	48:52 1-5	1:08
44	50:01	1:08 4-5
45	51:08 3-5	1:07 3-5
46	52:16 4-5	1:08 1-5
47	53:25 1-5	1:08 2-5
48	54:33 1-5	1:08
49	55:40 4-5	1:07 3-5
50	56:48 3-5	1:07 4-5
51	57:56 2-5	1:07 4-5
52	59:04 3-5	1:08 1-5
53	1:00:12 4-5	1:08 1-5
54	1:01:21	1:08 1-5
55	1:02:29 3-5	1:08 3-5
56	1:03:38 3-5	1:09
57	1:04:47 1-5	1:08 3-5
58	1:05:56	1:08 4-5
59	1:07:03 4-5	1:07 4-5
60	1:08:12 2-5	1:08 3-5
61	1:09:21	1:08 3-5
62	1:10 29 2-5	1:08 2-5
63	1:11:37 2-5	1:08
64	1:12:45	1:07 3-5
65	1:13:53 1-5	1:08 1-5
66	1:15:01 1-5	1:08
67	1:16:09	1:07 4-5
68	1:17:17 1-5	1:08 1-5
69	1:18:25 1-5	1:08
70	1:19:33 2-5	1:08 1-5
71	1:20:41 1-5	1:07 4-5
72	1:21:49	1:07 4-5
73	1:22:57 1-5	1:08 1-5
74	1:24:05	1:07 4-5
75	1:25:13 1-5	1:08 1-5
76	1:26:20	1:06 4-5
77	1:27:26 4-5	1:06 4-5
78	1:28:33 2-5	1:06 3-5
79	1:29:39 4-5	1:06 2-5
80	1:30:46 1-5	1:06 2-5
81	1:31:52 4-5	1:06 3-5
82	1:33:00	1:07 1-5
83	1:34:07 3-5	1:07 3-5
84	1:35:22 1-5	1:14 3-5
85	1:36:31	1:08 4-5
86	1:37:39	1:08
87	1:38:48 1-5	1:09 1-5
88	1:39:58 1-5	1:10
89	1:41:07	1:08 4-5
90	1:42:14	1:07
91	1:43:21	1:07
92	1:44:28	1:07
93	1:45:34 3-5	1:06 3-5
94	1:46 41	1:06 2-5
95	1:47 47 4-5	1:06 4-5
96	1:48:54 1-5	1:06 2-5
97	1:50:02 1-5	1:08
98	1:51:07 2-5	1:05 1-5
99	1:52:14 2-5	1:07 1-5
100	1:53:21 4-5	1:07 2-5

Digitized by Google

THE NEW THOMAS CAR

THE Thomas Flyer for next year is a 50-horsepower machine which shows many radical changes over the present Thomas car. The E. R. Thomas Motor Co. has spared nothing in making the construction of the present car high grade. By way of changes it can be noted that the atmospheric inlet valves have been replaced by mechanically operated valves, and that the inlets and exhausts are placed on opposite sides of the cylinders. Instead of the cone clutch there is one of the disk type, four forward speeds are used in the gear case, the wheel base has been increased, from 104 and 110 inches as used at present, to 118 inches, very long springs have been added and four brakes fitted. The unique style of Thomas bodies is retained, but the top of the back seat is lower, eliminating the heavy appearance associated with the very high back. The square corner effect is replaced by easy corner curves. Chain drive, hollow metal dash, ample carrying compartments, and most of the other features are retained.

The sub frame, so common on this year's machines, has been dropped, the motor now being carried direct on the main frame side pieces, which are offset in front for this purpose as well as to increase the turning angle. These side pieces are of deep section and taper considerably toward the rear, but not so much to the front. In cross bracing channel sections are used, each being riveted and supported by large gusset plates, also riveted in place. Where the side pieces are offset they are reinforced by heavy channel pieces.

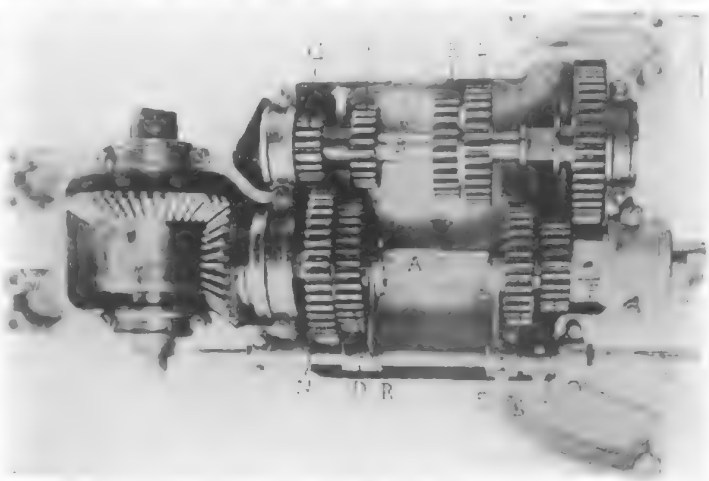
Instead of using tubular axles, the drop forge I-beam type are now employed. These are made of steel and have been treated for this purpose in order to stand shocks, stresses and strains. The rear axle is one piece, including the spring seats, in this way eliminating the use of brazed spring seats. The knuckle forgings are machine tapered, with large fillets, and are attached to the I-beam yokes by a hardened and ground pin. All wearing parts are fitted with hardened steel bushings. The road wheels are made to take 34 by 4½-inch tires and each revolves on two races of Hess-Bright ball bearings. The weight of the car is approximately 3,000 pounds.

In the construction of the motor, each cylinder is made in a separate casting, with such parts as the inlet and exhaust valve ports, cylinder heads, and water jackets forming an integral casting. All valves are made interchangeable and are placed in the bottom of their respective ports, the method of removal being through openings in the valve port heads. The inspection caps over these ports are ground to fit and are secured by a cross yoke, held in place by a setscrew, the loosening of the screw and giving the yoke a half turn being sufficient to lift the cover plate out. Both camshafts are encased within the crank chamber and are driven by external gears of the combination type, having very wide faces and protected by an aluminum shield. The crankshaft is a drop forging, ground to a finish all over and runs in long plain bearings fitted with chain oilers. Each oil pit beneath the crankshaft bearings carries a supply sufficient for 750 miles. The cylinders have a bore and stroke of 5½ inches, giving the rated power at 1,000 revolutions. Each piston is ground and the five piston rings are ground to 1-10,000 inch. The wrist pin is hardened steel and ground. On the pistons are oil grooves filled by the oil admitted through the cylinder walls, one oil duct from the mechanical oiler to each piston. Forged steel connecting rods are supplied.

The cooling facilities have been increased by adding practically a third to the radiating surface and increasing the service of the water pump threefold. Little change has been made in the ignition system. It is practically the same as that used for the last 2 years, with the single unit coil and jump spark system and with either dry cells or storage batteries. Provision has been made, however, for attaching any of the recognized magnetos, which can be directly attached to the motor and gear driven. The commutator has been improved, but, as was the case this year, will be located on the dash and is gear driven. Hitherto the wires have been gathered about the commutator, but now they are removed from sight.

The carbureter is of the automatic type and is manipulated from the top of the steering gear, as is also the lever for advancing and retarding the spark. It is directly connected to the clutch pedal with the independent throttle, which acts as a governor when either the foot or emergency brake is used. It is provided with means for taking either hot or cold air.

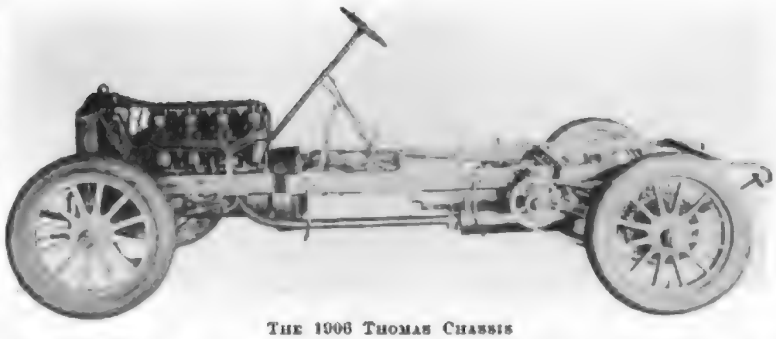
A mechanically operated oiler is located in the dash. The tank is of liberal size and has six sight feeds, four of them leading directly to the cylinders and two to the crankcase. The oil is delivered through the medim of individual pumps. In addition to supplying oil to the crankcase by the pump system an in-



FOUR-SPEED GEAR SET OF THE 1906 THOMAS

Digitized by Google

dividual oil cup is also supplied, insuring a quantity of oil in the case. The lubrication there is by the customary splash system. In charging the case with oil two pet cocks are located in the bottom of the crank case to indicate the proper level of oil when the case is filled.



THE 1906 THOMAS CHASSIS

For the Thomas car next year the disc clutch has been adopted. It is a metal to metal, three-plate device. The center plate is of manganese bronze and the outer plates are of gray iron. The manganese plate, being a transmitting member, is provided with a series of holes filled with cork cushions. The push pedal, with an easy pressure, releases the clutch. The clutch is provided with ball thrust bearings and adjusting screws for taking up wear. The prevent the transmission shaft from running when the clutch is disengaged a special thrust is provided, causing the shaft to come to a standstill, enabling the operator to shift the gears easily.

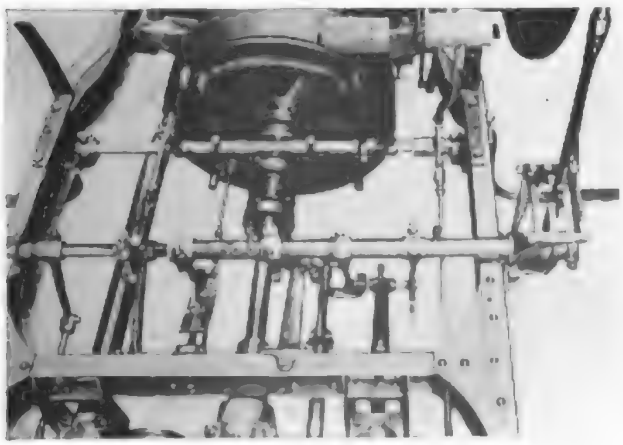
In having four forward speeds in the sliding gear case, a feature common in most of the high class European machines is added. The case is carried on two of the frame cross pieces, two short curved arms on the front of the bottom part of the case supporting the front part and a pair of arms close together carrying the rear end. Enclosing of the differential gears in the rear end of the case gives that part a narrow formation, necessitating the arms being close together. The use of Hess-Bright bearings throughout the gearcase and jackshaft, with the exception of the main bearing marked F, is a leading feature. Changes in speed are gained on the selective principle, two shifting units moved respectively through the shifting arms D and E, eliminating the necessity of passing through intermediate gears when changing from a low to high speed or vice versa. One lever at the right, working in a double-slotted quadrant, is used in making speed changes. On the direct drive the shaft C from the clutch is connected with the squared main shaft A by moving forward the gear, S, as shown in the illustration, so that dental face teeth on its forward side interlock with others on the rear side of gear T. The gear M on the counter shaft being moved forward at the same time is taken out of mesh with T and the countershaft is left stationary on direct drive. For second speed ahead gear S is moved back, meshing with L, and at the same time M moves into place, meshing with T. For third and fourth forward speeds the unit comprising gears N and R is moved so that R meshes with K for the third speed and N with H for the fourth. In reversing gears N and G are connected by an idler. The shifting arm D is mounted on the shaft X, which is connected with the gear shifting lever, and E is on a sleeve on the shaft and is similarly connected with the shifting lever. All gears are interlocked with the clutch, the clutch being thrown out before a speed can be changed. In this year's cars all gears have a ⅞-inch width, but in the 1906 model this has been increased to 1¼ inches. They are all drop forged and of large diameter. All of them are made detachable, so should a break ensue or any change be necessary replacement may be made speedily. Rapid inspection of the gears is made possible by the use of a large inspection cap in the top part of the case. Final drive is through double side chains, Whitney roller chains being used. The sprockets are made with the hub part and the ring piece carrying the teeth separate, being fastened together by bolts, the object of the construction being to facilitate the changing of speed ratios without interfering with the adjustments of the jackshaft bearings.

As the differential is in conjunction with the transmission case, this also has been improved by the addition of another set of pinions, increasing the strength. The brakes are four in number, two of large dimensions on each rear wheel. Two of the brakes are of the internal expanding type and are operated by pedal and the other two are external, operated by the emergency lever, but both brakes are connected in such a manner that with one movement of the emergency lever all brakes are applied, the clutch is disengaged and the motor throttled, but the foot brake is of such proportions and strength that by its use alone the car may be held on heavy grades.

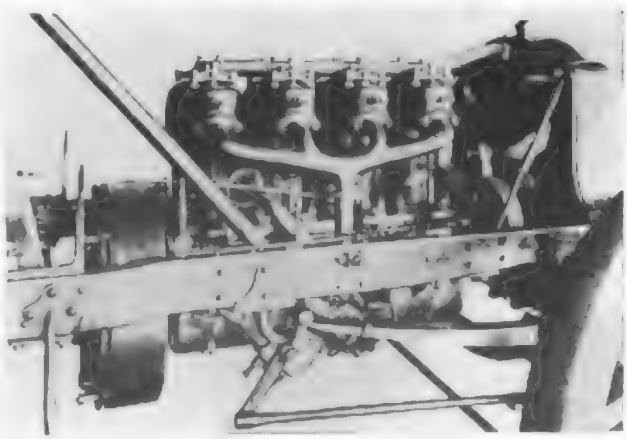
The hill-climbing safety device is retained and the strength of its construction increased. This device consists of ratchets on the outside of the rear axles, into which a dog slips by the working of a small lever at the right side of the operator. It can be engaged or disengaged while the car is traveling at any speed.

In body design the dash, made of aluminum, is shaped to conform with the hood and lockers are situated on each side for carrying small tools. Natural wood is used in the interior finish. The present side tonneau lines are retained. The rear seat is wider than before and two collapsible revolving seats, which can be stored under the cushion in a compartment under the rear seats, are added, enabling five people to ride comfortably in the back half of the car. Three designs of body are made. The touring car, limousine and the landaulet. The last two accommodate the same number of people as the touring car and their upper lines conform with the lower half of the body. The top of the touring car body folds back to the level of the rear seats, the lining of the top folding in, just giving an unobstructed view to the rear.

All styles are finished in standard colors, according to the tastes of the purchasers, running gears and bodies being finished in the same or different colors. Upholstering. The front seats are individual and, like the tonneau ones, are heavily upholstered. Extra tonneau accommodation is given for two by revolving side seats, neither of which interfere when entering or leaving.



CLUTCH AND OPERATING RODS IN THOMAS CAR



INLET SIDE THOMAS 50-HORSEPOWER MO-

Digitized by Google

RAMBLER LINE FOR 1906

THE 20-25-HORSEPOWER FOUR-CYLINDER 1906 RAMBLER CAR

ONE OF THE interesting trade announcements is that three 1906 Rambler models will have vertical four-cylinder motors with transmission through a sliding gear set. Thomas B. Jeffery & Co. have previously always been content with machines carrying horizontal motors beneath the body, driving through planetary gear sets.

The Rambler menu for next year embraces seven models, two used this season that are being carried over and five new vehicles. Those carried over are the surreys, types one and two, the former an 18-horsepower side-entrance five-passenger car, with a two-cylinder opposed motor, and driving through a two-speed and reverse transmission, with single chain drive, and the latter a 20-horsepower motor, of similar design, with drive from the transmission shaft to a counter shaft by single chain and from the counter shaft by side chains to sprockets on the rear hubs. Both of these models have been retained without change except a few details in the transmission gears and the use of an aluminum crankcase in the larger model.

Of the new machines, surrey type three is fashioned largely after the lines of types one and two except that the wheel base is made 100 inches. The power plant is an 20-horsepower two-cylinder opposed motor, placed lengthwise beneath the body with the planetary gear shaft axially in line and final drive through single chain to a sprocket on the spur gear differential. The Rambler runabout for the coming season will be a two-cylinder vehicle rated at 10-12 horsepower with standard motor and transmission parts and single chain drive.

It is natural to expect that the three four-cylinder cars will prove the interesting models. They are officially known as types fourteen, fifteen and sixteen, the first a 20-25 horsepower light touring car with cylinders having a bore and stroke of 4 and 4½ inches, respectively, and the last two are fitted with motors with 5 by 5½-inch cylinder measurements and rated at 30-35 horsepower, one being a five-passenger side entrance touring car and the other is a limousine, with chassis identical with the touring car, and a body design fashioned on the most approved lines and finished in keeping with its design. One feature of type fourteen is shaft drive, while double chain drive is used in types fifteen and sixteen.

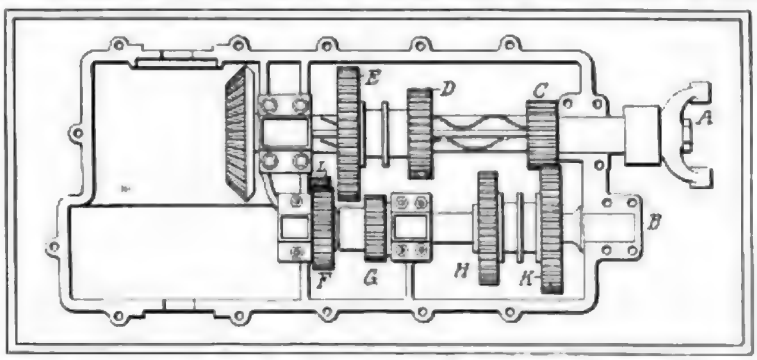
In keeping with Rambler construction during the present season the use of ball bearings in the road wheels is continued, the bearing construction not varying from the standard lines. In the front wheels the steel cone A threads onto the end of the spindle B and between this and the steel cup C, of hook-like design, the balls are retained. For adjusting the balls, the nut F within the hub cap is adjusted and between this and the bearing cone is a washer E, anchored against rotation. The bearing cup C rests against the hub part D of the wheel. The weight of the machine is carried in the steering knuckles by the balls G retained between the horizontal rings H, the lower ring resting on the hub K of the steering knuckle spindle and the other connected with the jaw part L of the knuckles.

Rambler radiators have always been a conspicuous feature—in fact, a distinguishing mark on the machines—and the vertical flat tube type introduced on the four-cylinder machines is also unique. Flat brass tubes of approximately 4 inches in depth but very narrow and equal to the height of the radiator in length are placed side by side and connected at the top and bottom with water tanks. The tubes are soldered in place and are held apart throughout their length by cross bridges. For assisting in cooling a fan is carried back of the radiator, being belt driven. Conspicuous in connection with the fan must be noted the stamping of the blades out of one piece of metal. The fan blades are riveted to a metal hub and carried to a metal rim, which protects the outer ends of the blades and retains them in position.

In main frame construction in the 30-35 horsepower car the use of pressed channel steel parts throughout is in keeping with modern practice. The side pieces have a depth of 4⅛ inches in the center, tapering to 1⅞ inches at the front end and 3 inches at the rear end, are narrowed alongside of the motor, and in order to permit of a three-point suspension of both the motor and gearcase a few differences in the disposition of the cross pieces is found. Where the side pieces narrow is a pair of deeply dropped channel pieces placed back to back and on these rests the back end of the motor. Nearer the front of the frame are two motor support braces, running from the side pieces to a cross piece. These braces have a long taper union with the side pieces, to which they are riveted, and carry the two arms on the front end of the motor, completing the three-point suspension system. Each of the braces is riveted to the cross piece near its center. For the transmission support two cross pieces are used, one furnishing a single broad support for the front end of the gear box and the other carrying its two rear corners.

Owing to the use of full elliptic spring in the rear, and having the same pivoted on top, the frame side pieces are slotted at the rear ends, through which passes the rod to which the springs are pivoted. The rod is made rigid with the frame by bearing blocks resting on the bottom of the channel on which the spring rod rests, both being retained by clips. The semi-elliptic front springs are bolted to forged spring hangers, the latter being long and having a shoulder abutting against the front cross piece of the frame. At the rear ends the springs are attached in the usual manner. Both sets are 40 inches in length and are clipped to axle seatings brazed in position.

In the 20-25-horsepower machine slight



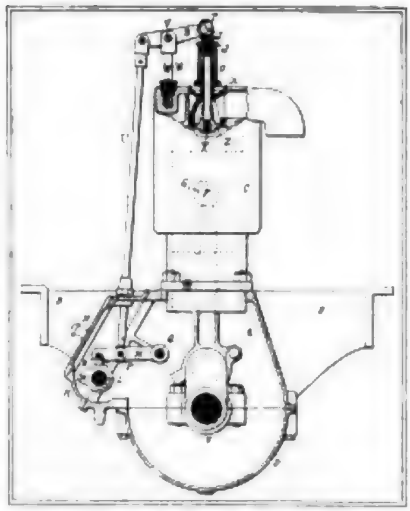
TRANSMISSION SET OF THE FOUR-CYLINDER 30-35-HORSEPOWER RAMBLER

Digitized by Google

differences in frame construction are used because of the shaft drive. A sub-frame is used which is fastened in front and rear to cross pieces. It is on the same level as the side pieces of the main frame, but the cross pieces within it are dropped to give a low center of gravity. Three point suspension of the motor and gearcase are features here also. Front axles in both models are centrally dropped and made from tubing, with a 5-16 inch wall in the larger car and ¼-inch in the smaller one. To the tube ends are brazed the jaw type steering knuckles. Thirty-two by 3½-inch tires are used on the small car and 34 by 4-inch on the larger model.

The motors of the two machines are practically alike, except as to size. The four cylinders are separate castings, with the valves placed side by side in the heads, the use of valve ports thereby being eliminated. The valves are operated by overhead valve levers of walking beam pattern and similar ones within the crankcase in connection with the camshaft. Accessibility in the way of removing the valves or the camshaft and also in the examination of the crankshaft bearings and connecting rods, has been planned. The use of special nickel babbitt in all motor bearings, with grooves for distribution of lubricant, is noticeable.

The crankshaft is a three-bearing drop forging ground to finish, and has hand scraped bearings. The cylinders are ground to a fit, assembled, and then put on a testing stand, where they are run by a steam power and polished to a mirror finish by the use of crocus and oil. Pistons of the straight side and flat top style are used, each carrying three sets of double compression rings, two above the piston pin and one beneath. On the bottom part are four oil grooves for catching the splash. The connecting rods, of I-section drop forgings, are split at the top so they can be clamped on the hollow piston pin. The pin has its bearings in the piston journals and is fitted with two oil holes in each journal, so that the oil enters the ends of the pin and flows toward the center into the bearing. The pin is held from end movement by spring ring in a groove



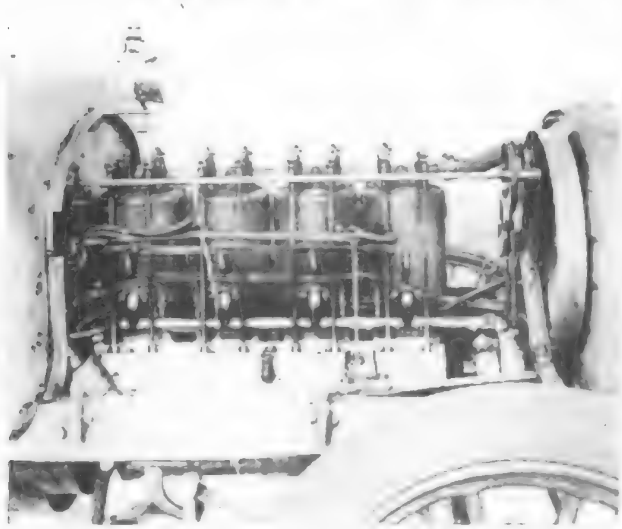
End Elevation Four-Cylinder Motor

in the piston. To do this the end of the piston journal is cup shaped and into this is sprung a steel ring, which in case the connecting rod loosened on the pin the ring would prevent the pin from scratching the cylinder walls. The lower end of the connecting rod has a hinged cap secured at the loose side by nut and spring lock nut, the top part of the nut being concaved to receive the cone-shaped split lock nut.

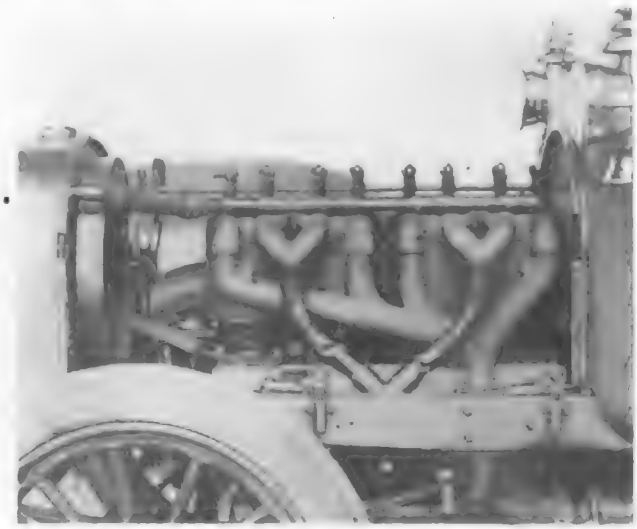
In the end section of the motor the general construction of the cylinder and crankcase and the method of actuating the valves may be studied. The top part of the crankcase A is an aluminum casting supported on the main frame through the arms B, each resting on the engine support braces. The base D serves only as an oil basin, the three crankshaft bearings being carried at the top part of the case. On the right side of the case are inspection plates H, which when removed disclose the camshaft and valve actuating parts, as well as the crankshaft and connecting rods. The arms B on the case being between the first and second cylinders, two inspection plates suffice, one small one at the front for examining the first cylinder part and a long one behind it for the parts of the three rear cylinders. The valves in the cylinder heads are placed so that the inlets in the two front cylinders are adjacent and the same position is used in the rear cylinders in order to facilitate the inlet piping. The valve cages X screw into the cylinder heads, the opening in the head being ground for tight fit. The valve heads Z are beveled to 45 degrees and have the steel stems Y screwed in place and finally riveted. By having the valve cage made with a long sleeve on top for carrying the valve stem the latter is protected throughout its length, and surrounding it is the valve spring O resting on a flange on the stem sleeve and retained at the top by a nut J secured by a locknut I on the valve stem.

Valve movement starts from the camshaft L placed in a separate compartment, well removed from the crankshaft, so that adjustments can be made with the connecting rods without the camshaft and its parts interfering. On the shaft are the integral double cams M, the inlet and exhaust for each cylinder being in one piece and pinned in place. The cam lever N is pivoted at its inner end at Q, the opposite end carries the steel wheel R, against which the cams operate, and midway of the ends is a third steel roller P on which rests the lower end of the rod U, passing to the top of the motor, where it is pivoted to the outer end of the valve lever S. This lever S is pivoted at V to the support W, screwed into the cylinder head, and in its other end receives the part T for pushing the valve stem. Peculiar in connection with the part T is that the end resting on the valve is rounded, so that when the lever S forces the valve down the action of the rounded end is practically the same as if a roller were used. By having T screwed in place the slightest adjustments are easily made, there being a slot in the head for receiving a screwdriver. Lowering the piece T increases and raising it lessens the valve lift.

To remove either the inlet or exhaust valves, the pivot bolt V, retained by a cotter pin, is removed and the valve lever

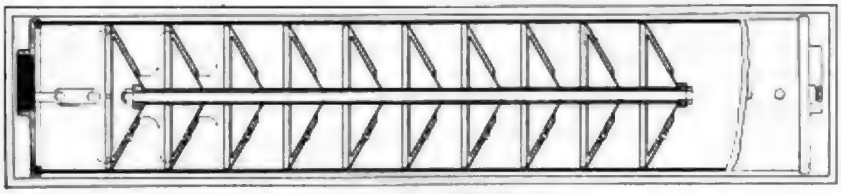


Left Side Four-Cylinder 30-35-Horsepower Rambler Motor



Right Side Four-Cylinder 30-35-Horsepower Rambler Motor

Digitized by Google



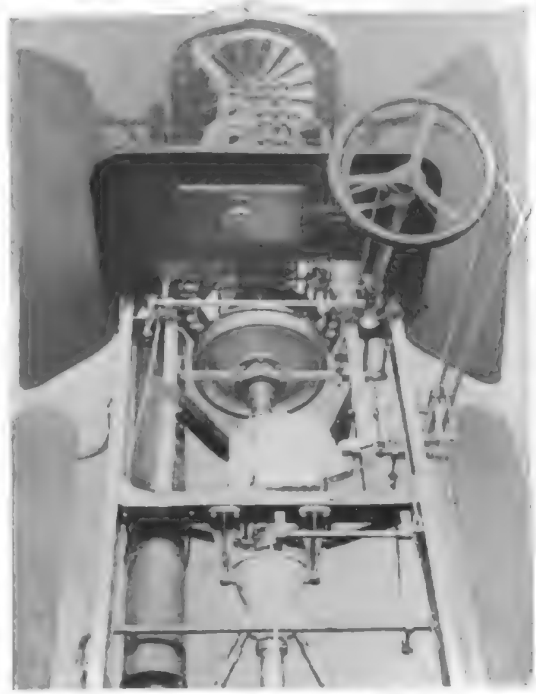
Detail of Rambler 1906 Muffler

S is lifted out of position and the valve cage, which carries a hexagonal nut, is unscrewed, when both valve and cage may be lifted. In removing the valve from the cage the locknut and nut J are taken off. Should it be necessary to remove the camshaft the entire camshaft casing K may be removed by taking off a few nuts before removing it.

In the ignition scheme Rambler-made spark plugs are placed angularly in the sides of the cylinder heads, below the inlet valves, and the electric current is supplied from storage battery, supplemented by dry cells. The circuit connects with a coil on the dash and with a commutator carried on a vertical shaft driven by the camshaft. The commutator is placed beneath the center part of the dash and slightly above the footboard. In all wire terminals the screw type of fastening is dispensed with. At the spark plugs each high tension wire ends in a hook, held to the plug head by a C-shaped spring on the plug and where the wires connect with the commutator they are provided with a split globular ball that fits into socket terminals in the commutator, making it only necessary to force the ball into the socket and to remove it by a jerk. The commutator, also of Rambler design, is unique in that the four wire terminals are not moved in advancing or retarding the spark. Within the casing carrying the terminals is a ring piece with segment parts that rest against the contact connections. These connect with the contact points. In advancing or retarding the spark the ring part is shifted.

The control of the Rambler is different from other machines in that the spark cannot be shifted without affecting the throttle control, there being no separate spark lever. Both spark and throttle are connected with the ring beneath the steering column, so that to increase speed the throttle is opened and the spark advanced until a certain speed is maintained, when the spark is then in its most advanced position. After that further engine speed is gained by using an accelerator. Another touch of home manufacture is found in the new carbureter, which is of the automatic type, with auxiliary air valve under spring control. By placing the carbureter close to the motor simple piping serves for conducting the gases. The piping is made from aluminum with brass unions, and has ground joints. The exhaust piping is an integral casting with four branches.

The new muffler is fashioned on cylindrical lines, being of medium diameter but very long. It is carried lengthwise beneath the frame at the left. The interior of the cylinder is divided into several equal sized compartments by a series of cone-shaped plates arranged in pairs, two forming each partition. One is secured to a central pipe in the muffler and does not reach the muffler casing, and the other contacts with the casing but does not extend to the center. Between these two parts is a space through which the gases pass from one compartment to another, leaving one between the plates near the muffler casing and passing into the next compartment near the center, the flow of gases thus following the line indicated by the arrows.



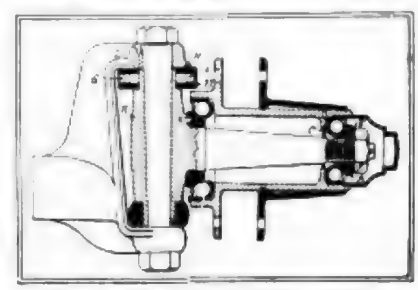
Chassis of the Shaft-Drive Rambler

Transmission from the motor is through a leather-faced cone clutch, held in engagement by a heavy coil spring surrounding the clutch hub, which has its bearing on a continuation of the crankshaft, a race of ball bearings taking up end thrust when the clutch is engaged. A feature of the device is that the clutch spring is entirely enclosed and runs in oil. For engaging the clutch, a squared cross shaft on the car frame with a depending yoke engaging the collar of the clutch sleeve is used. To facilitate engagement and disengagement a compound pedal is used, so that a long loverage is gained, giving good foot movement on one end of the pedal and short movement of the clutch on the opposite end. Between the clutch and gear case on the large car is a double universal joint and in the smaller car a telescoping shaft is used.

Within the gear case, which follows typical construction throughout, are the main and countershafts A and B, placed side by side, with bearings between the halves of the gear box. Plain nickel babbit bushings are fitted and in lubricating an oil bath is used. As a precaution against grit getting into the bearing, wire screens are placed in the bottom of the oil cups on the bearings. Three forward speeds and a reverse are given, the first with direct drive by using the internal toothed gear D on the square main shaft, meshing it with the master gear C on the end of the clutch shaft. For the second speed the drive is to the countershaft through the gears C and K and back to the main shafts by gears H and D, for slow speed gears G and E are meshed and for the reverse an idler L is used between gears F and E. On the main shaft are angular oil grooves to ease the movement of the sliding unit formed by the gears E and D. Final drive, in the larger model, is by a differential countershaft and double side chains. The gear case illustration is of this model, with the differential cross shaft omitted. In the chassis illustration of the shaft drive car the novelties in the drive can be followed. The propeller shaft has but one universal joint and that at the front end, enclosed within a conical aluminum casing, which screws into the casing for the shaft. Two angular braces from the rear axle to the casing make the latter rigid with the rear axle. The joint casing has its support in two brackets secured to the frame cross piece, the casing trunnions having bearings in the brackets. These bearings are directly in line with the axis of the joint, the construction giving a rigid casing with one pivoted point between the axle and the frame, and as the rear springs are compressed pivoting them at the top gives the result gained by having sliding joints in the shaft. All changes in speed are gained through one lever. Spur gear differentials are used in all models.

Three brakes are fitted, one working on the differential and in both cars enclosed within the differential casing, and two emergency brakes working on the rear hubs.

The bodies of both models are alike and are characterized by having the back of the rear seats only a few inches higher than the front seats, with wide side doors; individual front seats, and hollow metal dash.



Rambler Ball-Bearing Front Hub

Digitized by Google

THE STEVENS-DURYEA LIMOUSINE

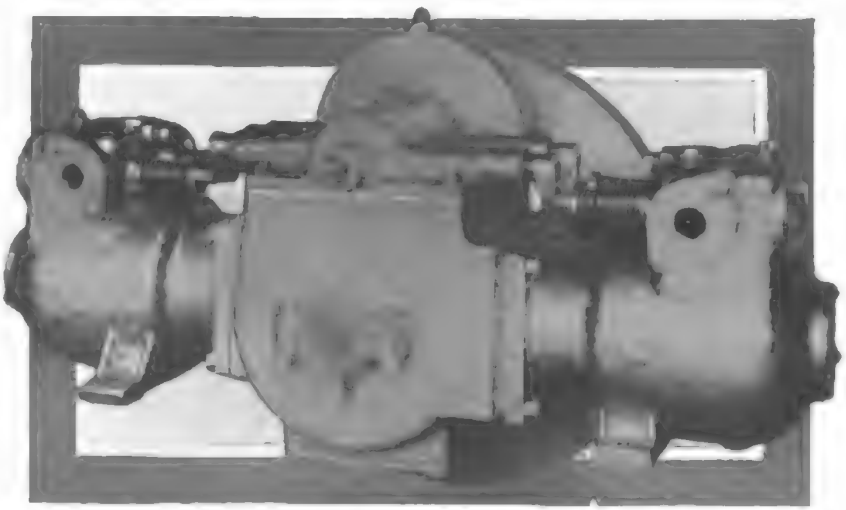
The Stevens-Duryea limousine, a product of the J. Stevens Arms & Tool Co., of Chicopee Falls, Mass., has the regular chassis of the Stevens-Duryea car marketed during the present season. Noticeable in the construction of this chassis is the 20-horsepower four-cylinder vertical motor, which, together with a multiple disk clutch and sliding gear transmission gear set is carried within one case, the whole casing having a three-point suspension, two of the supporting points being on opposite sides of the front of the crankcase and the third point at the rear of the center of the gear case. Final drive is through a jointed propeller shaft. The use of a subframe is eliminated and the simplicity of the main frame is worthy of note. The side pieces are parallel throughout their length and are tied together by cross pieces, one supporting the back end of the gear case and two near the rear of the frame, the front ends being connected by the two motor lugs that rest directly on them. The flywheel is carried on the front end of the crankshaft, just above the front axle.

The limousine body does not follow radical lines in design, the curves being similar to those used in several limousine designs. The rear corner curves are not large or of the king of the Belgians type, but decidedly easy throughout, an effect which is increased by the scroll-like bottom of the side entrances. Large windows —square in the doors and practically square in the sides and back—as well as a large one above the back of the operator's seat, provide excellent light. Pull curtains, speaking tubes, electric lights and all of the other limousine luxuries are installed. A canopy projects over the driver slightly further than the top of the straight dash and sliding glass front and drop side curtains are wet weather additionals. The front seat is not divided, change speed and emergency brake levers are at the right and on the steering column are other controlling devices. The arched-top hood with gilled sides and honeycomb radiator are used. Running sideboards, mechanically attached tires and very large front fenders are other features. The body finish as well as the upholstering is up-to-date and in colors to suit the purchaser.

A WELL-DESIGNED CINCINNATI-MADE MOTOR

Accessibility, now the watchword in automobile construction, is prominent in the 16-horsepower two-cylinder opposed motor built by the A. Streit Machine Co., of Cincinnati, O. Accessibility to the crankcase is obtained by having the case made in cubical-box form, with the top a large opening, over which the cap carrying the camshaft and push rods is attached, so that when the cap is removed the camshaft and push rods are removed, disclosing the crankshaft and connecting rods and not in any way interfering with the adjusting of any of the motor parts. In the ends of the crankcase are large openings, over which the cylinders are bolted and the bottom of the case is a removable plate. Support in a car frame is through lugs on the bottom of the cylinders. The case is not split for inserting the crankshaft, the shaft being carried in bearings carried in large plate pieces bolted into the case ends. Integral cylinder castings, with the valve ports above the cylinder heads, are features in keeping with general accessibility. Mechanical valves, placed side by side, with the valves held to their seats through the usual coil springs, are used, but the position of the valve stems and push rods differs from the ordinary. On the ends of the push rods are depending feet, against which the ends of the valve stems rest, making it easy to remove the top of the crankcase and the push rods. In taking out the valves, screw caps in the ports directly in line with the valves have to be removed, when the valves be drawn out. The inlet and exhaust pipes enter the ports at the sides, and holes for the spark plugs are in the tops of the ports, allowing the plugs to be fitted vertically, in order to facilitate wiring and render removal easy. The internal construction of the motor is standard in practically every way, and with a bore and stroke of 5 inches the rated horsepower is furnished at normal speeds. The crankshaft is made with a diameter of 1¾ inches and has bearings 3½ inches long. The wristpin bearings are 1¾ by 3½ inches. The cylinder walls, pistons and piston rings are ground to standard size and babbitt bearings are furnished throughout. Complete, the motor weighs 375 pounds, 135 of which is taken up in the flywheel.

Lubrication is by either gravity or positive oilers, the reservoir in each case being located near the motor and supplying lead to the cylinder walls and crankshaft bearings. The crankshaft and cams are dependent on the splash. Pipe for conducting water from the radiator to the water-jackets can be coupled to the ports.



STREIT 16-HORSEPOWER OPPOSED MOTOR

Digitized by Google

From the Four Winds

THOUGHTFUL MOTORISTS LOOK OUT FOR SAFETY OF THEIR FELLOW ENTHUSIASTS

Chauffeurs Provided—R. J. Jacobs, Box 565, Pasadena, Cal., offers to find competent chauffeurs for owners contemplating wintering on the coast.

Lost Car Reclaimed—Joseph E. Hannon, a Los Angeles attorney, has just recovered a car lost in a peculiar way. A repair man was returning it when it broke down, so that the repairman was forced to leave it and go back to the shop. The police picked it up as a stray and held it until finally Hannon claimed his orphan.

Fighting Dust—In Paris the authorities are testing a new dust-laying preparation, a tarry compound which is spread over the roadway by means of the Lasally system. It is first rendered inflammable and then heated in a machine, afterward being transferred to the distributer, which is fitted with four brushes, which move up and down, and spread the compound evenly. Another method being employed is a preparation styled odocreole, which is mixed with water to the extent of about 30 per cent. The operator carries the odocreole in a small tank on his back, which is connected with an ordinary hose running to a water plug.

Delays Show Allotments—There will be a slight delay in the announcement of the allotment of space at the Chicago show, due to the fact that the applications so largely exceed the available space. All of the space set aside for accessories in the gallery has been allotted by the Motor & Accessories Manufacturers. For space in the automobile section, which occupies the main floor of the Coliseum and the first floor of the annex, there are eighty-seven applicants, who desire to show 368 cars, and who apply for 224 spaces, aggregating 62,845 feet. The number of spaces available is 131, aggregating 39,497 feet. The management seriously considered the erection of a supplementary gallery 18 feet above the floor, 30 feet wide and running around the building. This would have furnished about 18,000 feet additional space, but was abandoned on the advice of the building commissioner, because of the danger of fire in view of the enormous quantity of lumber required in its construction. The announcement of the allotment will be made in about a week.

Thomas Oil Advocate—E. R. Thomas, of Buffalo, is about to start a movement in favor of oiling the roads in the vicinity of that city and will endeavor to induce the Buffalo Automobile Club to take up the matter.

Another Test—The New York Motor Cycle Club will hold a regularity and judgment run on Sunday, November 12, instead of election day, as first planned. The run goes from the club house at 10 West Sixtieth street to Bedford, N. Y., and return, the total distance of 90 miles to be covered at the average rate of 15 miles an hour. A special prize will be given to the motor cycle coming nearest the exact schedule.

Weaver Helped—The whirlwind campaign which the city party in Philadelphia has been waging against the boodlers and grafters would have been impossible were it not for the automobile. On Thursday night of last week Mayor Weaver spoke at Bustleton, in the extreme northeastern section of the city, and at Paschalville, in the extreme southwestern part, the two points being fully 23 miles apart, besides addressing two other assemblages en route. The route followed by the mayor is thickly settled, and extreme speed was impossible, yet his honor kept his engagements to the dot.

At It Again—Just when the public had come to the conclusion that the fight between the automobilists and the authorities of Grand Rapids, Mich., had been forgotten, the war has broken out again. Halloran and Dunn, who have become famous in this part of Michigan for their efforts along the line of arresting automobile statute violators, have put their stop-watch in operation again. Four arrests under the statute have been made and more are promised. Although the automobile club is still quiet, there is something in the air. Four hotelkeepers, one of whom conducts a hotel partially owned by Mayor Sweet, are awaiting trial in the superior court on a charge of keeping their bars open on Sunday. The arrests were made, it is said, at the behest of an agent of the automobile club.

Aero Club Growing—Sixty-four of the 100 members desired by the Aero Club of America for its founders' membership have been secured. The list is expected to fill up before the end of the month. The library committee is collecting a valuable lot of data about aeronautics with the idea of having the finest library in the world. Coöperation of leading experts has been promised.

Motor Cycle Test—Sixteen out of eighteen entries started on the tri-car trials of the Auto Cycle Club of England, running from Uxbridge to Wheatley and Banbury, returning by way of Aylesbury, a distance of 124½ miles. Thirteen finished. It was a combination non-stop, consumption and brake test, with a timed hill climb thrown in. The average consumption of the thirteen cars that finished was 3 gallons 1 pint for the 124½ miles. H. G. Priest on a Quadrant was first home, while V. Riley on a 9-horsepower Riley was first in the hill climb, going up the 1180 yards of gradient varying from 1 in 11 to 1 in 16 in 1 minute 51 4-5 seconds. The awards have not been made public. A. Hooydonk in a 4½-horsepower Phoenix tri-car, traveled the entire distance on 14 pints of gasoline.

Has Judge Guessing—Frank Smith, of Syracuse, N. Y., is giving the authorities considerable food for thought and County Judge W. M. Rose is unable to decide whether or not he is a criminal or just foolish. The question to be decided is whether a man who forges a check to get an automobile when he knows that he will have to forge another before he can buy gasoline to run it is in his right mind or not. Smith was recently arraigned in the county court on an indictment charging the forgery of a check for $30 upon the Farmers' National Bank of Rome. He pleaded guilty to the charge, saying that he wanted to get an automobile. He is 22 years old and says he comes from Vermont. On account of his silly smirk Judge Ross thought that perhaps he might not be right in his mind and held the case open for investigation.

Inventors' Chance—The inventor who can produce the best automatic starting device for the motors of automobiles will have a chance to pull down a nice slice of coin, Henry Deutsch de la Meurthe having offered $2,000 for such a device, the prizes to be awarded by the Academie des Sports. The money will be divided. The first competition, for which $1,000 will be given, will be held next month, while the other will be during December, 1906, both to take place while the Paris salon show is open. The Automobile Club of France drafted the rules. The devices must be submitted in working order on a car having a one, two or four-cylinder engine, but if of the four-cylinder type the engine must be of at least 20 horsepower. It must be capable of being operated from the driver's seat, and must work equally well with the engine cold or warm. The jury in making its awards will take into consideration, among other

Digitized by Google

points, those of weight, size, simplicity, price, cost of upkeep, ease of action and facility for fitting to existing cars. Drawings must also be submitted, but will not be judged.

Mileage Rivals—There is no little rivalry as to who holds the mileage record in Hartford, Conn. Leonard D. Fisk has done 60,000 miles in his Panhard, while Dr. Emil G. Reinart has driven a Mark XII Electric runabout in his practice 25,000 miles making his rounds.

Plunge Into River—An English motor car took a plunge into the Mersey recently. It was being taken onto a ferry when the canopy top fouled some of the deck fittings. At the same time the crew eased the steamer forward and the driver of the car started slowly. He was on the gangway when the plank dropped and the car went with it. A woman passenger and the driver were rescued by two bystanders.

Fighting Scorching—The scorcher in Milwaukee has discovered that he is up against it. The police force is after him and its efforts are backed by the moral support of the Milwaukee Automobile Club and many owners of machines who are not connected with the organization. The police authorities have marked off a stretch on Grand avenue where the scorchers generally succumb to the temptation to hit it up. The space is accurately measured and police officers with stop-watches occasionally camp there for a while and time a few machines. The result is usually a visit to the police court on the part of some chauffeur who became unduly enthusiastic.

A. C. A. Ticket—Dave Hennen Morris has been renominated for the presidency of the Automobile Club of America. The other nominations are: For first vice-president, Colgate Hoyt; for second vice-president, Frederick G. Bourne; for third vice-president, Clarence Gray Dinsmore; for treasurer, W. S. Fanshawe; for governors to serve 3 years, Colonel John Jacob Astor, George F. Chamberlin, Schuyler Skaats Wheeler; for governor to serve 2 years, William Pierson Hamilton; for governor to serve 1 year, John E. Borne. These nominations will be voted upon at the annual meeting on Monday, November 20. There is no likelihood of an opposition ticket.

New Tag Man—H. M. Cutshall, ex-member of the legislature, has been placed at the head of the state automobile bureau, a sub-department of the highway department of Pennsylvania. On and after January 1 next all automobile licenses and tags will be issued by this bureau instead of by the prothonotaries as formerly. The new law requires a tag on both the front and rear of each machine, these to be issued with the license. Unless local offices are opened in the larger cities of the state much trouble is likely to follow the simultaneous dumping upon the bureau authorities of thousands of applications immediately upon the opening of the new year. Nothing covering this apparent defect of the new law was incorporated in the bill as it passed the legislature, and Pennsylvania automobilists anticipate much inconvenience and delay unless something is done to remedy it before January.

New Uses for Car—An automobile led the grand march at the ball given last Thursday by the employes of the New York branch of the Pope Mfg. Co. at Manhattan casino. When the motor car is taught to dance there will be no more wall flowers.

Enterprising Hawkeyes—Newton, Ia., is proud of the growth of motoring in the town, twenty cars already being owned there. An automobile club is being talked of and one Newtonite, Thomas Balmer, is about to branch out and manufacture runabouts.

Warns Motorists—Participants in the recent economy test of the New York Motor Club appreciated the forethought of the Richmond County Auto Club, which has been carrying on a good roads campaign and which has posted warning signs at bad curves and dangerous hills throughout the county.

Means Business—Chief of Police Kiely, of St. Louis, is most strenuous in his crusade on automobile scorchers. Besides instituting a shotgun patrol, he has included the down town district in the territory to be covered by the cars manned by the police. It is charged that motorists dash through the crowded streets, paying no heed to the heavy traffic.

Car Lost—A careless Trenton, N. J., young woman lost her brother's automobile the other day, and, although she called on the police to help her, no trace of the machine can be found. She took the car out for a little trip, and when a few miles out in the country something went wrong, and of course she didn't know what it was. Leaving the car in the middle of the road, she went home and told her brother about it, and although he went to the scene of the breakdown at once, nothing could be seen of the car.

Motor Cyclists Suspended—W. T. Marsh and A. A. Hoyt, prominent in the motor cycling trade, it is announced by the Federation of American Motorcyclists, have been suspended from the national organization following the preferment of charges of disloyalty, conduct unbecoming members and prejudicial to the interests of the Federation of American Motorcyclists. The complainants ask for the expulsion of both men. According to F. A. M. officials, the trouble arose over the decision of a referee. He ruled a special racing machine out of a race restricted to stock machines, and the makers of the machine were so incensed that they attempted to form an organization to control the sport. The F. A. M. officials allege that the organization was formed merely by printing a letterhead bearing a title and the names of three so-called officials, all of whom were employees or attaches of the manufacturers concerned. The latter then hired a track and held two outlaw race meets. The riders who competed were all promptly suspended, four of them for life. Marsh and Hoyt are charged with having assisted these several movements, and also with serving as officials at the outlaw race meets, it is claimed.

Seeks Site—The Milwaukee Automobile Club has not yet decided on the location of its new quarters, but a special committee is considering several eligible sites. The new quarters will be opened by the first of the year, if not sooner, and the members of the club are looking forward anxiously to this event.

Queer Charge—Charles Vogele, of the Vogele & Dunning Candy Co., of Toledo, Ohio, and William Luck, of Detroit, while going through Milan, Mich., in an automobile, found the street blockaded with the hose of the fire department, which was engaged in practice. The firemen making no attempt to remove the obstruction, the automobile was run over it. The firemen promptly turned the hose on the autoists and the force of the stream was so great that Vogele was knocked from the machine. Warrants have been sworn out on a charge of assault and battery.

Fear for Road Race—Cable advices from Havana state that subscriptions are coming in so slowly that there is danger of the Cuban road race being abandoned. The race last year left a deficit of some $6,000, which was paid by the Havana Racing Association. This year a larger sum will be required and the association declares it cannot and will not stand the expenses. So those who derive the benefits are invited to come forward and drop their contributions into the hat. A promise has been secured to improve the roads a bit, but the city council is apparently fighting shy of the invitation to lend a financial hand. It is figured that $14,000 will be needed.

Is Shoe on Other Foot—Up in Cheltenham, Springfield and Whitemarsh townships, Montgomery county, Pennsylvania—the trap country just north of the Philadelphia line—it looks just now as if the automobilists who have contributed no little during the past year toward fattening the treasuries of county and township were going to have an inning. It appears that the money collected in fines is to be applied to road improvement, and the most urgent use that could be found for it was in paying the cost of widening Church road, one of the automobilists' favorite stamping grounds. The township and county authorities agreed, and the road was widened from 33 to 40 feet, just about using up the $3,700 collected in fines—according to the calculations of the authorities. It now appears, however, that the awards to those who own the various expensive properties abutting on Church road are grossly inadequate and up to date about thirty appeals have been filed against the action of the road jury. Present appearances indicate that before all hands are satisfied fully $7,000 or $8,000 will have to be paid for the work, and now the automobilists are chuckling to themselves at the mess their persecutors have made of things.

Digitized by Google

The Realm of The Commercial Car

Motor Wagons used by German Brewers

GERMANS have not been slow to appreciate the advantages of the motor from a commercial standpoint and as early as 1897 one of the Berlin breweries, the Bohemian, employed a gasoline machine in the delivery of beer. The great German industry of malting and brewing has been one of the first to utilize the automobile and has been the foremost in encouraging the economic and efficient construction of the machines by manufacturers, among whom the Daimler people have been the most successful. On the crowded business districts of the capital city the heavy keg and bottle delivery wagons are common sights.

The German commercial wagon looks every inch a business proposition, and intended for a decade and not a month of service. Americans attempt in many cases, in building commercial trucks, to produce a machine of graceful lines but lacking that important essential of a business wagon, rigidity and strength, intended to withstand the heaviest service. This is prominent in German cars, particularly in the wheel and tire construction; the wheels being of the heavy artillery pattern, with wide rims. In five cases out of ten they are shod with broad steel tires and in other cases heavy solid rubber tires are used on the front wheels and double rubber tires on the drivers. The shoe brakes, operating on the surface of the tires of the rear wheels, are not as graceful as hub brakes, perhaps, but the experience of German builders is that with the ordinary driver these brakes are less harmful to the car than hub brakes and work little injury to the tires. Brake application is by means of a heavy side lever. This type of brakes, it must be understood, is not used on all machines, but is very general on those weighing over 2 tons and capable of carrying 4 or 5 tons.

Another feature with the heavy German commercial wagon is the low speed ratio to the driving wheels. The salesman's story that "it is rated at 14 miles per, but can make 20 to 25 miles with ease," is not practiced in Germany, and as a result the heavy wagons are not racked to pieces in a few months by fast driving over rough crossings and poorly paved streets. Thanks to the government of German cities, poorly paved streets are as uncommon as well paved thoroughfares in many American cities, and as a consequence steel tires are much used on heavy wagons, the extra vibration occasioned thereby not injuring to any perceptible degree the motor and other running parts.

Load carrying appears to have been the watchword of every builder, whether the Daimler concern or the least known manufacturer. With good streets the 7-ton load, while massive to the limit, is not inconvenient in being piloted or propelled through the streets. Americans who have been accustomed to looking to England, Germany or France for the best in commercial construction, as well as in pleasure cars, may be slightly disappointed in finding that the vertical motor in front of the dash with the driver's seat behind it is still responsible for half of the carrying space on the chassis frame. In some cars the back of the seat is midway between the front and rear axles and the load carrying platform is consequently thrust far behind the rear axle and the control of the machine correspondingly impaired, as the skidding on wet streets and in winter seasons is much accentuated. The scheme of placing the driver above the motor, thereby making his seat high and so leaving more space for load carrying, has not as many followers as in England, the present leader in the commercial game. The heavy German driver perhaps finds it sufficient work to mount to the ordinary seat instead of having to do a step-ladder act where the seat is mounted over the motor.

It is generally asknowledged that the tube radiator with water tank is more serviceable for commercial trucks than the honeycomb type, but the German in a few cases disputes this point, even the Daimler concern using its familiar automobile radiator on many of its heavy trucks. The danger of rupturing this kind of radiator is great and the difficulty of repairing it is well known. The tube radiator, on the other hand, is strong, capable of resisting a good jar, and when damaged can be repaired by the ordinary mechanic. A touch of wisdom is found in the design of many of the cars fitted with the tube radiator in that it is hung beneath the car frame, with the front part of the frame protecting it in front, so that if the truck collides with other wagons the frame, in taking the brunt of the collision, protects the radiator.

The wisdom shown in centering the controlling devices of trucks around either a vertical or inclined steering column is general with all machines and the broad leather-cushioned seat with straight back is another touch of good sense. Rear fenders are unknown, the German having hit early upon the idea that on trucks they are the greatest of all nuisances. Many trucks have little fenders over the front wheels, but the present tendency is to dispense with fenders entirely or to make them as small as possible. In the line of lamps similar good judgment is met, the big style being properly exorcised

BOTTLED BEER WAGON OF THE JULIUS BÖTZOW BREWING CO., OF BERLIN

Digitized by Google

and a pair of the smallest headlights, carried on the top of the dash, substituted.

The Bohemian Brewing Co., one of the half-dozen big malting houses, has now the largest stable of automobiles in Berlin, twelve motor wagons, traveling out daily from the brewery, doing the distributing and collecting business. Most of the cars cover at least 63 miles and some more than that distance each day in going to and from the suburbs, such as Wittenberg, Buchholz and Trebbin. The first motor wagon purchased in 1897 is still doing its daily routine with the rest of the stable. One of the big wagons used by this company in distributing to the keg trade has the rear wheels fitted with shoe brakes and, in spite of the heavy appearance of the car, skims over the cobblestone pavements with comparative ease. The broad rear wheels contribute much of the ease with which the vehicle travels. Flat-iron tires are used. The driver sits in front, just in the rear of the motor, and controls through a vertical steering column.

The Bohemian brewery uses also a bottle wagon of the broad-tired type with a box bed. It is a product of the Daimler concern and is conspicuous by a high box body with several decks for bottles. Carrying space is increased by crowding the vertical motor well over—in fact, ahead of—the front axle, leaving ample carrying space.

A large 10-horsepower machine, with iron tires, built for the bottle trade, is used by a prominent brewery and has the rear wheels much larger than those in front, giving the machine a wagon-like appearance. It has an American type of rack for containing the cases of bottles.

The Daimler firm has built two heavy bottle wagons for the Aktien brewery. They are two-cylinder machines, yielding 16 horsepower, with the two cylinders huddled beneath a Renault design of hood, except in that the radiator is hung low in front of the axle. Both have the hay-rack style of body, which is well suited for carrying cases. The road wheels are of wood, artillery pattern, with wide steel tires and brake shoes. The Versuchs company uses similar wagons. One of the old high wheeled type has an enclosed body and short motor box. The operator sets on top and looks much like a circus wagon driver on the highest point of a van. The other wagons are of the more modern type, with long wheel base, the driver sitting at the rear of the hood. The brewery has a large

THE SCHULTHEISS BREWERY'S IMMENSE KEG BEER WAGON

outlying trade and the machines are frequently called upon to travel long distances. The company has a well-fitted repair shop where the cars are thoroughly overhauled every night and prepared by expert machinists for the heavy work of the following day.

Perhaps two of the newest and best delivery wagons in Berlin are operated by the Schultheiss brewery. They are two-cylinder motored machines of Daimler make, each yielding 8 horsepower, and travel at an average speed of 10 miles an hour over all sorts of pavements. The wheels are broad and the tires are of heavy rubber. They are capable of carrying 7,920 pounds of merchandise, have been in use since the first of May, and have needed only minor repairs. Both are for the bottle trade and have very commodious enclosed carrying compartments, with top rails for carrying large cases of bottles. Double tires are used on the rear wheels and single in front. The same house owns a large wagon for the keg trade, being a machine weighing 6,300 pounds and carrying 3-ton loads. It has bar sides, solid tires and surface brakes. The 8 to 12 horsepower motor yields an average speed of 7½ miles per hour. This machine has been in use a year and is in excellent working order, although its weight-carrying capacity is nearly every day tested to the utmost. The company, in deciding upon the machine, selected this one because of its ability to make hurried runs. Frequently heavy deliveries are made to outlying sub-stations and quick return runs are then made with empty kegs. The truck has been particularly successful in its tests. Fifty kegs are carried with ease and in emergencies any number of additional kegs can be heaped on top.

The wagons used by the Botzow brewery are 20-horsepower machines, weighing 6,600 pounds each and carrying 3-ton loads. They make two and three trips daily through the business districts, covering about 70 miles each. The wagons were put in service at the first of the year. The broad rubber tires, solid in front and double behind, make the going practically free from vibration.

CANDY MAN USES MOTOR CARS

J. George Smith, of St. Paul, Minn., is an automobile enthusiast who can give some valuable pointers on turning automobile enthusiasm into practical channels. Incidentally, Mr. Smith is a retail confectioner, who holds the exclusive and fashionable trade of the city in a grasp which has aroused the envy of all competitors. Five years ago he put into commission the first regular automobile delivery wagon in St. Paul, a Waverley electric, and the original

VARIETY OF AUTOMOBILES USED BY J. GEORGE SMITH, OF ST. PAUL, MINN., IN THE CONFECTIONERY TRADE

Digitized by Google

car is running today, with three more as companions. When Mr. Smith embarked in the automobile field in 1900, Smith's automobile delivery stirred the interest of the entire city. Recently automobile deliveries became so numerous that something was necessary to keep the interest centered about Smith's, and the Waverley factory has recently turned out to order a new car, described recently in MOTOR AGE. Two electric deliveries, an electric runabout and a Pierce Great Arrow make up the Smith squadron now, but the cars are only a small part of the equipment of the establishment. The confectioner has taken an ordinary store building on Sixth street, the most fashionable business street of St. Paul, and has built into the rear, facing on Automobile alley, a private garage holding three and, in a pinch, four cars. In this garage are three charging plants, and on the curb in front of the store is another charging plug. As a finishing touch, Mr. Smith has

MR. SMITH'S GARAGE IN THE CELLAR OF HIS RESIDENCE

turned the basement of his house, in the residence section on St. Anthony hill, into a garage capable of holding the three electrics; and has for the past 3 years been running a 50-lamp electric lighting system from the batteries of one of these cars. The Smith store on Sixth street is at the corner of the alley, next to the Metropolitan theater. The building is 23 feet wide, and the salesrooms and ice cream parlors extend back to within 10 feet of the rear end. The back of the store has been narrowed down to 15 feet, and Mr. Smith is left with an L-shaped space outside the walls of his salesrooms, which at the widest part is not more than 10 feet. Large double garage doors were put on the alley side of this space, so that nearly the entire side can be thrown open, and under proper manipulation four cars can be stored there. The garage is equipped with all necessary apparatus, abundant charging apparatus, and leaves the confectioner absolutely independent of repair shops, washing stations storage houses and other garage features.

Mr. Smith estimates that the charging of his batteries does not cost on an average of more than $4 or $5 per month for each car. This includes the new electric, which carries over 200 small incandescent lights; and also includes the charges which are turned through the private lighting system in his residence. Outside of this expense and battery repairs, which he estimates at $50 a year, there are practically no expenses except the salary of the man who runs the car. Each machine makes about 10,000 miles in a season. The new electric is running from 30 to 40 miles each day, and it is a fact that the Smith deliveries have never been tied up by serious accident. Mr. Smith does not allow any of the electrics to run beyond second speed, and many accidents are doubtless avoided in this way. Machines are kept constantly in charge at the curb, or in the garage, when not in service, so there is no giving out of power.

The house garage is something that was worked out with great pains by Mr. Smith. His house stands on a 40-foot lot and the entrance to the basement is from an alley in the rear. Here a cement decline nearly 60 feet long leads to the cellar, where big double doors allow the entrance of any of the machines, including the Pierce Arrow. It cost him $200 to construct the driveway, build up stone walls on the sides and properly drain the basement. He says a new house can be fitted with a basement garage at a cost of $100. At first water flowed down the cement driveway and flooded the cellar. An inside drain would not carry it off, and to solve the problem an outside 8-inch drain was placed just outside the doors. This cares for most of the water, and the inside drain takes the balance and at the same time acts as a drain for the washing stand in the basement. An extra set of batteries in the basement, charged from one of the electrics, gives storage power for the electric lights in the house.

Altogether, Mr. Smith has the maximum of efficiency and effect at the minimum of cost. Advertising is one of the strongest reasons for the popularity of Smith's, and the automobile deliveries have materially aided in this branch. The new Waverley has "Smith's" in electric lights in front and rear and electric lights above the sides, which illuminate the signs on the side of the car. At night the car stands in front of the store, drawing power from the plug on the curb and at the same time emblazoning "Smith's" upon the air.

BREWERS INSPECT BIG TRUCKS

English brewers are closely watching the progress of the commercial vans, as was shown at the twenty-seventh annual brewers' exhibition in Agricultural hall, London, 3 weeks ago, when four commercial vehicle manufacturing concerns—Jesse Ellis & Son, Messrs. Fodens, Savage Brothers and the Yorkshire Patent Steam Wagon Co.—were represented. Savage Brothers had their Little Sampson steam tractor, the engine being mounted on springs. Volute springs are fitted to each bearing at the rear axle and there is one laminated spring to the center of the front axle. The tank capacity is enough for a journey of 8 miles, drawing about 6 tons along an ordinary road. Besides the Little Sampson the Savages had a 5-ton steam wagon with a boiler of the locomotive type, with a fuel shoot at the top of the arch, so that the driver and stoker can easily get at their work of feeding the fire, or inspecting the boiler. Two special poppet type safety valves are fitted, one set to blow off when the maximum working pressure of 200 pounds to the square inch is reached. This connects with the muffler. The other valve blows off at about 10 pounds above the working pressure and is only used in the event of an accident to the other. The feed water heater consists of a chamber containing straight, cold drawn steel tubes, through which the feed water is forced, and which are surrounded by the exhaust steam. The rear axle is of the fixed type, and made of a solid rectangular forging. The double acting brakes will stop the vehicle on 12½ per cent gradients.

In the Yorkshire 5-ton steam wagon is used a boiler of the double-ended locomotive type, the engines being compound, with 4½ by 7½ cylinders. The rear axle is carried in spherical sliding bearings, arranged in such a manner that the gearing is not affected by the rise and fall of the wagon on its springs. Two speeds are provided, corresponding to 2½ and 5½ miles an hour. The boiler feed is a force pump, worked by the crank shaft, with an injector for emergencies. The brake gear is of the screw-down type, acting on both rear wheels. The tank has a capacity for 12 miles and has a steam water lifter.

The Ellis exhibit consisted of a 4-ton brewer's wagon, which can be used for either the barrel or bottle trade, with two speeds and a reverse, and with the main axle running in steel roller bearings. The Ellis patent water tube boiler is used. The Fodens' rig is fitted with a horizontal multitubular boiler and double crank compound engine. The machine is heavily constructed, has broad driving wheels, and is well suited for heavy service.

Digitized by Google

COMMERCIAL STEPPING STONES

Tri-Cars Used by the Westminster Gazette in Paper Delivery

Line for Kentucky—An automobile mail and passenger system is to be put in operation between Milton and Carrollton, Ky. It is proposed to put in a 24-passenger canopy-top automobile and to run it on regular schedule.

Entirely New—The Ohio Manufacturing Co., of Upper Sandusky, O., is building a specially designed gasoline traction truck, which, if successful in the use for which it is intended, will change the oil business in Ohio. The machine will furnish motor power for drilling and dressing tools, and will also carry a movable derrick from place to place.

Will Test Buses—The Motor Union of Western India will hold reliability trials from January 17 to 21, inclusive. From Bombay to Poona will comprise the first day's run and from Poona to Mahableshwar the second day. A hill climbing contest is scheduled for the third day and the remaining time is for the return run, over the same route, to Bombay.

Cook Outdone—Thirty days of touring in the south of France, touching such centers of population as Nice, Monte Carlo and Mentone, is a program arranged by the London Motor Omnibus Co. in one of its big Vanguard omnibuses. The route will be by Rouen, Orleans, Avignon, Orange, Marseilles and Hyeres, while such places as Grenoble, Dijon and Paris will be made on the return trip. A fare of $250, including traveling tickets, hotel accommodations, meals, motor excursions and the service of a competent conductor, is charged. Already all accommodation has been taken up and more are applying.

Paper Uses Tri-Cars—Delivering newspapers by tri-cars in the heart of old London can be considered one of the latest conquests of the gasoline motor. The Westminster Gazette, noted from time immemorial for its dispatch in delivery, has installed a fleet of four tri-cars for covering the heart of the city in distributing its papers. The tri-car, selected because of its light weight and good speed, is admirably adapted for work on crowded streets, as it is capable of threading through congested thoroughfares where its big brother, the motor car, would be stalled behind endless lines of wagons for blocks at a time. These little hustlers can pick their way with astonishing quickness. The papers occupy a conspicuous place between the two front wheels in a carrying box, the outsides of which are utilized in posting the leading features of the paper. The single cylinder motors are mounted between the driver's legs, motor cycle style, and drive to the single rear wheel through a roller chain.

Organized New Company—Ford Wharton, of Sharon, Pa., has formed a company to operate touring cars between Sharon and Mercer. A line will soon be in operation between Warren and Cortland, O., a few miles distant.

Model Bus—The Loveless Transfer Co., operating a motor bus line out of Warren, O., uses a Packard bus, which has a unique form of body construction, the chassis, however, being the same as used in the regular 1½-ton Packard trucks. A glance at the body lines reveals innovations in the compartment for the driver in front with its vestibuled appearance, glass front, side doors and accommodation for light baggage. The passengers-carrying part in the rear is unique in possessing a perfectly enclosed compartment reached by a side door rather than one in the end. In the rear is a drop platform, to which heavy trunks can be strapped. It would be difficult to design a vehicle better intended for use in inclement weather, the heavy box design and glass windows affording excellent protection, while not restricting the lighting arrangements. All of the operating devices are entirely enclosed and in point of comfort the bus can be looked upon as a good sample of the Pullman motor coach of the days to be.

New Truck Maker—The Commercial Motor Truck Co., of Toledo, O., with a capital stock of $20,000, has been organized by C. A. Kellar, J. E. Moran, H. M. Hoover, Gus Haas and Otto Kniegge. The company will manufacture gasoline motor trucks. The location for a plant has not been fully decided.

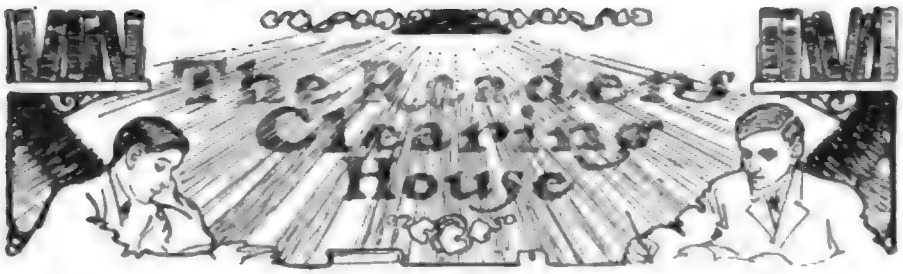
For Pleasure Seekers—George W. Boyce, of Syracuse, N. Y., president of the Lewis Point Land and Improvement Co., expects to start an automobile transportation line along the shores of Oneida lake, taking in Oneida, Lower South bay, Lewis point, Upper South bay, Canastota and other places. Lewis point is being developed as a summer resort and the promoters are planning to get all the transportation lines feeding into it as possible.

Wants Electric Vehicles—Commissioner Cantine, of Albany, N. Y., is starting a shaking up in the police and fire departments in the city, and advances as a part of his new scheme the introduction of electric patrol wagons to take the place of the horse-drawn wagons. He is also advocating the buying of a motor runabout for the exclusive use of the chief of the fire department to be used in case of fires and when on rounds of inspection.

Starts With Cartridge—The Wolseley Motor Car Co., of Birmingham, England, has dispatched to the General Electric Co., of Schenectady, N. Y., a six-cylinder vertical gasoline motor of 140 horsepower, designed to actuate the generator of an electric railway carriage. The novelty in the design is that the first three cylinders in sequence of impulse are furnished with cordite cartridge breech block. In these a charge is electrically exploded when the engine is to be started. They give the initial impulses which start the group and the usual cycle of operations succeeding the breech blocks are removed and sparking plugs substituted. In England when big gasoline engines have to be handled for stationary work, a small supplementary engine is filled for starting purposes, but the cordite cartridge is a simplification.

Model Packard Passenger Bus Used by the Loveless Transfer Co., of Warren, O.

Digitized by Google



CHAINS AND GEAR DRIVE

Hartford, Conn.—Editor MOTOR AGE—It might be stated that the Italian car which made by far the most wonderful exhibition in the Vanderbilt cup race, was equipped with double chain drive. This, however, probably proves nothing in favor of the chain transmission, as the skillful and fearless Lancia would undoubtedly have made a similar record with a gear-driven machine if the parts were in good proportion and backed up by a sufficient amount of power. Both the chain and bevel gear methods of transmission have given manufacturers and users a lot of trouble, but step by step the difficulties have been eliminated until both styles have made records of which we may well be proud.

I have been told that a certain American racing car which the makers wished to enter in the cup race was found before the eliminating trial to be considerably over weight, but they brought it to a point well under the stipulated weight by abandoning the gear drive and replacing it with the double chain. If this is true it would indicate that the double chain transmission gives greater strength with less weight, and this point should not be passed unnoticed. A number of years ago our automobile manufacturers equipped their steam cars with bicycle chains and then added extra seats for additional passengers without increasing the size of the chain. This gave the chain drive a black eye from the very start. Notwithstanding this fact, I believe about 80 per cent of the cars are chain-driven at the present date. The chain and sprockets used on practically all of the earlier model gasoline cars were not correct and suitable for the purpose, and most of the chains were damaged by interference, as but few manufacturers allowed sufficient space for chain clearance. When it was found that chains were not heavy enough for the severe duty, it was in most cases impossible to remedy the difficulty by supplying larger or heavier chains on account of the limited space provided. When the gear drive was presented it was welcomed by many who had been annoyed with chain troubles, but later on they were equally disgusted with bevel gear troubles and difficulties with universal joints, thrust collars, weak rear axles, limited power, and other things of like nature.

Certain manufacturers made their own sprockets and evidently assumed it was only necessary to mill in same the correct number of teeth. If the sprockets were not the right width, not cut to the correct bottom diameter, teeth too straight on the sides and irregularly spaced, sprockets out of line, etc., it was supposed to make but little difference. When some of the same manufacturers commenced to experiment with the gear drive they were obliged to purchase their gears from manufacturers who were expert in this line and it was necessary to pay a high price for the quality and accuracy required to insure the gears revolving. If bevel gears were cut in the manner some sprockets have been the result would be astonishing. I believe both the shaft and chain drive at present on many cars are a success, but imagine the chain will be by far more popular in the future for the following reasons: Less weight, less friction, lower cost to manufacture, lower cost to repair, less time to repair, ease of changing gear ratios to suit road conditions for various parts of the country, saving on tires by less weight, more reliable rear axles for rough roads and heavy loads, and in case of an accident the chain-driven car may be pushed off a railroad track or from the center of a road. One pound added to the axle is harder on both tire and axle than many pounds added above the springs.—W. E. C., Whitney Mfg. Co.

CRANKSHAFT MANUFACTURE

Hartford, Conn.—Editor Motor Age—The method of crankshaft manufacture in America has been to drop forge the shaft in two pieces, then electrically weld and machine. To drop forge it is necessary to heat billets to cherry red, and the only way to get the strength back into the metal—that which is lost in the heating—is to hammer the forging until the normal strength returns. In Europe this method is not used, and is the one point of great criticism directed at the way of constructing American cars. The European method, made possible by the cheap cost of labor, is to drill squares out of a solid block and machine the shaft cold by lathe and milling machine. It is a matter of American progress that at least one American builder has adopted this slow and costly construction for 1906 cars and is now making shafts in this slow and laborious fashion, the completion of a shaft requiring 3 weeks' time.—S. H.

TECHNICAL AUTOMOBILE MEN

Milwaukee, Wis.—Editor MOTOR AGE—I have made a little investigation of the higher education and higher schools, pertaining to automobile work, and am convinced that we are pretty well fixed in this line. The automobile manufacturers of the United States are about to show the world what has been done in this country. The race among the manufacturers of automobiles in the different countries is a trying one, and it now is their aim to put a staple article upon the market, and this at a moderate price. In order to do this, the work is put into experienced hands, but where is the theory which occupies so prominent a seat in all our sciences? Who are the superintendents of automobile factories of today? They are men who worked up from the bench in bicycle factories, self-made men and practical, it is true, but of theoretical knowledge they have little.

Why do we need higher schools? Have we not some of the best engineering colleges of the world? Why not make some use of the graduates? Should the manufacturer investigate, I am positive he would be surprised in most of these men. Some have followed the automobile from its infancy to its present state and have taken a critical view of it in its smallest detail. They are good mechanics and can handle men successfully, systematically and more economically than the self-made men; yet we stand pat on the self-made men, who have little knowledge of the construction and the theory of the motor car, the combustion motor, the steam engine, the electric motor and the subject of ignition.

Some say there is employment for technical automobile men, and that there always will be—as they are imperative to the construction of motor cars—especially more so now than in the past; yet the manufacturer does not make use of them. Why not? Because he cannot get the technical graduate for the same amount of money that he can get the self-made man. Here his payroll is smaller and there he spends it tenfold in a roundabout way. The technical man does not wish to be put on a level with the ordinary laborer. Why did he spend his time and money on theory—to satisfy his own desires or to be of benefit to mankind?

In my travels throughout the United States the past summer I came in contact with a number of these technical men—men well experienced in all the phases of automobile work—who are at present following work in an altogether different field, because they are not valued as high as they ought to be. First make use of what there is, and, when this lot is exhausted, there still remains time for higher schools.—N. BINGENHEIMER.

FAVORS KEROSENE BURNERS

Northampton, Mass.—Editor MOTOR AGE—Having had 3 years of experience with kerosene burners, I find some cannot use them while others seem to obtain very good results. I wish to say that I bought several gasoline burners in 2 months and had so much trouble with them that I finally bought a kerosene burner. While I ran it for 1,700 miles, it was not any too good. It would go out and clog up, so I got another one which cost $45. I was unable to get any steam with it. I finally ran on to a party telling me about a kerosene burner called the Barrett, so I got one and have used it for 3 years. It was not just right in some parts, but for heating I have never seen its equal, so I now have it fitted with a special very heavy coil which sits right over the small pilot. This coil is 4¼ feet long, all in one piece, and is fitted with special piping. It will not clog. This burner is very light and double feeding, with nozzles so fixed as to catch all the carbon. It is easily cleaned.

Digitized by Google

I know of a steam car in this city which is equipped with one and the nozzle has not had to be cleaned all summer. My experience was with gasoline. Formerly I got about 8 to 10 miles an hour, but now I get over 12 and on good running about 15. On a test on a fine state road I made 14 8-10 miles with three quarts with a car that had three empty seats, weighing in all 1,445 pounds. I used a 14-inch burner and one Mason engine. This burner I have started in 7 minutes; that is, with 150 pounds of steam. It burns quietly. Even the pilot cannot be heard while in the car. Others I have used and seen roar so they can be heard a long way off. One pilot that I tried roared so loudly I was afraid to use it. This pilot is under the bottom of the burner and is air tight as well as the burner itself. There is no back firing from it, and after over 1 year's use of it the tube and boiler is as clean as when put on. No soot at all comes from it. There is a car here in the city which would not make over 6 or 8 miles an hour with gasoline, but will now make easily 20 with kerosene and costs less than half to run it than it did with gasoline. Having read a good many articles on this kerosene burner, I tell my story, hoping it will help some out of gasoline troubles. If there is anything that they do not understand I will gladly answer them if they will take the trouble to write me.—J. HARRIS WIGHT.

The correspondent's figures of 6 or 8 miles an hour when using gasoline, and 20 miles when using kerosene, are rather extravagant or else show distinctly that there was a lack of knowledge in the handling of the gasoline burner. The particular gasoline burner in question possibly needed repair or cleaning.

PRIMES THE CYLINDERS

Pittsburg, Pa.—Editor MOTOR AGE—I have had the same trouble in starting a motor of which a correspondent of MOTOR AGE complained, and after vexatious trials tried priming the cylinders, using a small rubber bulb as an atomizer. Treated in this manner the motor was always ready to start on the first turn of the starting handle. Now in cold weather I resort to this method always and never have the least trouble. It takes a few moments, but it saves time in the end.—E. V. W.

HOT AND COLD RIVETS

Toledo, O.—Editor MOTOR AGE—I have read your article on riveting, but do not agree with you. I have been building frames for an automobile company in this town. When I first started to work for this company riveting was done by hand and put in cold; later on, pneumatic riveters were installed and the rivets put in hot. I found that a rivet put in cold by hand was not as solid as when it is put in hot. In taking a frame apart a rivet put in cold is easier to chop out than one put in hot, because a rivet put in cold is not pounded into the hole as solidly as a hot one. A rivet put in white hot is like a chilled casting when cold. The riveters that I ran were used for 5-16, 3-8 and 7-16-inch rivets. These machines would not mash a head on cold rivets, but when put in white hot the machine, running under 90 pounds pressure of air, made a perfect head. This applies only to rivets 5-16 inch in diameter and over; rivets under this size are better put in cold and by hand.—VICTOR H. CHRISTEN.

POWER COMPARISONS

Delaware, N. J.—Editor MOTOR AGE—Will you please advise me what horsepower a 5 by 5½-inch double gasoline engine will develop, a double cylinder motor with 6-inch bore and 4¾-inch stroke? I want to know which has the more power for automobile use?—John H. Hoyt.

Presuming that the motor is well made and well proportioned, the 5 by 5½-inch double cylinder should give 11 horsepower at 700 revolutions per minute, and the 6 by 4¾-inch motor, at the same speed, should give 13.3 horsepower.

NEW IDEAS PERTAINING TO THE AUTOMOBILE

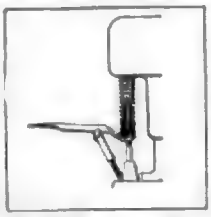
Selden's tubeless pneumatic tire is one of the few not using an air chamber and having the casing split and secured to the wheel rim similarly to mechanically secured pneumatic tires using the air tube. The tire has a thickened tread, part A, and carries a stepped lip E on one side, which is removable when removing the tire, and a hooked-shaped lip F on the other side, the hook partly surrounding the piece D resting on the wood rim B. When the flanges C are tightened in place by numerous cross bolts the curved edges of the lips E and F are forced together sufficiently to hold the air pressure with the proper inflation.

⁂ ⁂

Hill's method of removing cotter pins from valve stems, when removing the valves, is simplicity itself. One end of the lever fits beneath the cup, holding the bottom of the valve spring and the rod, acting as a fulcrum, rests in the angle of the push rod casing and the crankcase. By a downward movement of the outer end of the lever, the spring cap is raised, when the cotter pin can be taken out with ease and speed.

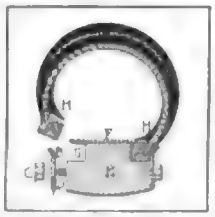
⁂ ⁂

The Lompereur anti-skid, a tire device which has already won continental fame, consists of a circle of metal shoes. Each shoe A lies crosswise over the tire tread and on the side adjacent to the tire is slightly concaved, so as to lie snugly against the tire when inflated. The outer surface of each shoe is flat in the central part, where it rests on the road, and is arched at the ends, where short links B unite the ends of the shoes. Within the arched ends of the links pass continuous crome leather strips O riveted to each of the shoes. The leather strips rest on the curve of the tire and serve in protecting the tire from wear by the ends of the shoes and also in holding the links in place, so that the entire anti-skid can be very easily handled when off the tire.



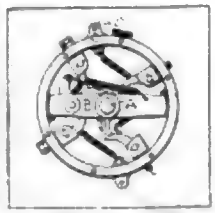
⁂ ⁂

The Toni single tube pneumatic tire, which is attachable by means of clincher-like lips, is somewhat of a novelty. The wheel rim has the corners next to the tire cut way, as shown at G, into which fits snugly the square lips A of the tire. For holding to the rim are side flanges B, retained through the medium of the cross bolts D in the rim, the nut C retaining the flanges. A circular plate F fits on top of the rim E and the lugs and has resting on the top of it the laps H which when the tire is inflated are held firmly on the plate F.



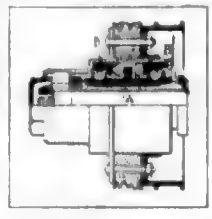
⁂ ⁂

The Drakner commutator, designed for non-trembler coils, is carried on the shaft A, to which the cross arm B carrying the pawl-like contact D is secured. The four stationary contacts are in the form of a pivoted pawl, held in position by a coil spring attached at one end to the casing and at the other to the body of the pawl. The rotating contact pawl D is also held in position by a longer coil spring. The action of the spring is such that contacts are certain at high speeds and by their use vibration is materially reduced, resulting in steadier and longer contacts. In timing the spark the casing is turned in the supporting ring, carried on the crankcase.



⁂ ⁂

The Hoffmann ball bearings for the road wheels of automobiles are designed on the compound principle, part of the balls being for radial support—that is, carrying the weight of the vehicle—and the others for taking up end thrust. The cone A has on its upper surface a raised central part between the bearings D D for separating these end thrust bearings, the opposite sides of these balls resting against the vertical side of the cups B, which form a race for the balls C for carrying the weight of the machine. A little pedestal can be noticed beneath the balls D D for keeping them in position. The adjustment of either set of balls is through a little screw resting against the outer surface of the cup B. A locknut is provided in the ordinary way, and a hub cap covers the end of the axle and locknut.



Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Findlay, O.—H. C. Kelley has sold his garage and agency to K. Zoll.

Minneapolis, Minn.—J. S. Spargo recently opened the Motor Car agency at 209 Fifth street, South Minneapolis.

Detroit, Mich.—The American Electro-Mobile Co. will not build its new factory until next spring, according to Secretary C. W. Beaumont.

Brunswick, Ga.—E. J. Olewine has rented the Levine building on Newcastle street, where he will carry on an automobile agency, in addition to his bicycle business.

Philadelphia, Pa.—An application has been made for the incorporation of the Hall Gas Engine Co., a corporation which proposes to engage in the manufacture of gas and oil engines.

Worcester, Mass.—The Automobile Dealers' Association of this city is considering the advisability of holding a 3 days' show in December or January. There are seven dealers at present in the association.

New York City—E. B. Gallaher, the American manager for the Richard-Brazier automobile, has announced the opening of an information bureau for automobilists in Paris. A suite of rooms has been engaged at 11 Rue d'Alger.

Lansing, Mich.—The Reo Motor Car Co. has appointed as local agents for 1906 Daniel J. Wurgis and Frank A. Wall. The local agency includes the counties of Ingham, Eaton, Ionia, Clinton, Shiawassee, and the northern half of Barry.

Lansing, Mich.—The Never Miss Spark Plug Co. has added a retail department of automobile supplies and promises to double its business next season. During the past season it claims to have sold 50,000 spark plugs and about 500,000 battery connections.

Detroit, Mich.—The C. H. Blomstrom Motor Co. is building an addition to its plant on Clark avenue, which, when completed, will increase the capacity of the plant about three times. The cost of the improvements is about $25,000, and the capacity will be increased to 1,500 machines a year.

Detroit, Mich.—A new addition is being built to the Cadillac company's factory at 1355 Cass avenue. It is entirely of cement and is being put up by the Concrete Steel & Tile Construction Co. It is probable that the building will be ready by December 1. The new factory is to be used for general manufacturing purposes and is to cost between $75,000 and $80,000.

Detroit, Mich.—The American Electro-Mobile Co., an eastern concern, is to locate here. It is a combination of small concerns. W. L. Woodrow is the president; Frank P. Ray, formerly associated with Edison, engineer, and C. W. Beaumont, secretary and treasurer. The exact location is as yet undecided. It will manufacture a new machine to be operated with an approved storage battery, which will give the machine a traveling radius of 125 miles without a recharge, it is claimed.

Portland, Ore.—Morgan & Wright has opened a branch at 86 Sixth street.

Pontiac, Mich.—The Welch Motor Co. has certified to an increase in the capital stock of from $100,000 to $250,000.

Chicago—Harry W. Cooper, formerly an inside man with Beckley, Ralston & Co., has been made city representative, calling on the retail trade.

St. Louis, Mo.—The Maxwell-Briscoe-Chase Co., western agent for the Maxwell car, is opening a branch at 3968 Olive street, under the direction of C. D. Harrington.

Chicago—The Royal Automobile Co., 144 Green street, has gone into the receiver's hands, Edwin C. Day, 1335 First National bank building, being the official appointed by the court.

Akron, Ohio—The Diamond Rubber Co. has increased its capital stock from $750,000 to $3,000,000. It is stated the company will shortly increase its capacity by the erection of a new building at its Akron plant.

Albany, N. Y.—A stock company has been formed with a capital stock of $50,000 for the purpose of building a garage. The location is at the corner of Pine and Chapel streets. The manager is to be C. Sutherland Ransom.

Concord, N. H.—Fred L. Johnson, 86 North Main street, runs a garage in the rear of the Eagle hotel. He has been well patronized during the past season by tourists to the White mountains. He has the agency for the Buick cars in New Hampshire.

St. Louis, Mo.—H. L. Hull of this city, is reported to be at the head of a syndicate after a concession to establish a plant in the City of Mexico for making all kinds of locomotive boilers, steam engines and automobiles. The company claims to have $1,000,000 back of it.

New York City—Gilsey Brothers have leased for a term of years for Madison Grant, as attorney, the four-story and basement garage at 215-217 West Forty-eighth street, to the Viqueot Co., which will use the property as a show room, repair shop, and garage for the Viqueot car.

Plainfield, N. J.—The Spicer Universal Joint Mfg. Co. will move its plant at the Potter works to the Spicer & Hubbard property at Madison avenue and West Third street. The capacity of the present place is much overtaxed. The company manufactures a dust and oil-proof universal joint.

Pittsburg, Pa.—Mrs. Mary C. Thaw has sold through the Commonwealth Real Estate Co., the vacant lot on the north side of Center avenue, for $15,500. The plot was bought by Dr. George Urling, of the Highland Automobile Co., and upon it the company will erect a two-story brick garage, at a cost of about $25,000. The company is now located at Baum and Beatty streets, and the present buildings will be sold when the new structure on Center avenue is completed.

Lynn, Mass.—Watson Coleman has been put in charge of the new White garage.

Boston, Mass.—The Grout Brothers have withdrawn their branch and in the future will dispose of their cars here through an agency.

Boston, Mass.—The Morrison-Tyler Co. is about to open its headquarters at 121 Massachusetts avenue, where it will show the Rainier and Maxwell cars, for which it is the New England agent.

Philadelphia, Pa.—E. C. Johnson is acting manager of the White branch, at 629-33 North Broad street, formerly occupied by the Banker Brothers Co. Johnson was formerly with the Quaker City Automobile Co.

Baltimore, Md.—The Auto Storage & Supply Co., of which James E. Norwood is president, has leased the property at 1416 Madison avenue, and will erect a garage at the rear. The structure will be two stories and 28 by 60 feet.

Cleveland, Ohio—The Brew & Hatcher Co. has changed its name to the Hatcher Auto Parts Co., Mr. Brew having retired from the firm. The company has recently improved its facilities for manufacturing automobile parts of all kinds.

Newark, N. J.—At the sheriff's sale of the business of George W. Condon, who ran a repair shop at 285 Halsey street, Michael J. Tansey, acting in the interest of the creditors, bid in the stock for $1,050. Patrick J. Nolan bought the interest in the business for $1.

New York City—Homer & Schultz have had their territory for the National enlarged. In addition to Greater New York and Long Island, it now includes Hudson and Bergen counties in New Jersey, Rockland and Westchester counties in New York, and Fairfield county, Conn.

Manchester, N. H.—The International Power Co. has taken over the Amoskeag Fire Engine Co. and will use the plant for the manufacture of automobile fire engines. D. A. Burt, the former manager of the La France Fire Engine Co., will be the manager of the fire engine department.

Cleveland, O.—The final organization of the Forest City Rubber Co. was completed at a meeting in the offices of Attorney George C. Wing. William E. Crofut was elected president and treasurer, and James C. Poore, vice president and secretary. Both of these men were formerly connected with the Ohio Rubber Co.

Fostoria, O.—The board of trade is endeavoring to secure new industries before the opening of the winter season. The largest of the propositions now before the board is an automobile factory, with a capitalization of $300,000, to get which it was necessary to subscribe $50,000 of the preferred stock. The amount has been raised and there is no doubt that the contract for the removal of the plant to this city will be signed before the end of the

Digitized by Google

week. The company contracts to build and sell 200 machines during the first year.

Hartford, Conn.—The Nicholas Auto Transit Co., of Nichols, has filed a certificate of organization.

East Moline, Ill.—The Moline Automobile Co. is building an additional building, 40 by 165 feet, necessitated by its increasing business.

New York City—Samuel P. Randolph has opened a temporary office for the Autocar Co., at 152 West Fifty-sixth street, with Jose M. Bellin as manager.

Dayton, O.—E. C. Coats, of the Peckham Carriage Co., has withdrawn from the firm and will open an automobile agency on South Main street.

Cleveland, O.—The name of the Automobile & Garage Co., of 404 Huron street, has been changed to the Standard Automobile Co., and will handle the Cadillac and Packard.

Philadelphia, Pa.—The force of the White branch has been considerably strengthened by the addition of A. E. Jones, formerly representing the Franklin at the Quaker City Automobile Co.

Peacock, N. H.—The A. H. Hoyt Co. has the agency for the Oldsmobile and Elmore cars. It has plying two buses between Franklin Falls and Tilton, N. H. One bus has cleared for its owner $15 per day during the past season.

Toledo, Ohio—The Commercial Motor Truck Co. has been incorporated with a capital stock of $20,000. The company has been in existence for some time and has been manufacturing a gasoline motor truck. The incorporation follows a reorganization of the affairs of the concern. The company's plant is located on St. Clair street.

Erie, Pa.—A new garage is being built by C. R. Dench. A dining room is to be connected with the garage.

Los Angeles, Cal.—The National Garage and Repair Co., with F. J. Richards as manager, has opened at 329-331 South Los Angeles street.

New York City—The Upton Machine Co., of 17 State street, with works at Beverley, Mass., will in future be known as the Beverley Mfg. Co.

Storeham, Mass.—The Phelps Motor Vehicle Co. is to be succeeded by the Courier Motor Co., which will occupy the old plant and double its facilities for turning out gasoline cars.

Boston, Mass.—The Radcliffe Motor Co. has secured the agency for the Frayer-Miller car, which, together with the Stoddard-Dayton, will comprise its line for the coming season.

Boston, Mass.—Harry Fosdick and Jewell Dowling are about to open their new garage on Stanhope street. They will handle the Fiat and Studebaker lines, and the National Fabrique motor cycle.

Oxford, Mich.—The Detroit-Oxford Automobile Works, located here, will move to Fostoria, O., this week. Lack of capital and the small size of the town is the cause assigned. The factory was started about a year ago.

Peoria, Ill.—The Illinois Automobile & Parts Co. is erecting a new garage, 40 by 90 feet, at the corner of Main and Globe streets, where the company will manufacture automobile timers, motors, etc., in addition to maintaining a garage. J. A. Holdsman, late of the Bartholomew company, is president and general manager.

Columbus, O.—The Paxson Motor Co., of Cleveland, has been incorporated with a capital stock of $10,000.

Cleveland, O.—The Auto Power & Appliance Co., of Cleveland, has filed a notice of increase of capital stock from $25,000 to $200,000.

Philadelphia, Pa.—F. W. Stockbridge, formerly in charge of the branch of the Reo company, has been succeeded by Daniel Cohan, formerly of New York.

Kingston, N. Y.—S. D. Coykendall is having erected a brick building, which will be used for the storing of automobiles. The building will be built on West Chestnut street.

Hartford, Conn.—Frank H. Harriman, motor manufacturer, has filed a voluntary petition in bankruptcy. Liabilities, $4,401.06; assets, $3,115.40. Of the assets, $2,000 represents 340 shares of the Harriman Motor Works.

Sodus, N. Y.—Lane & Parsons, of Hartford, Conn., have closed a deal here for the leasing of the plant of Tripp Brothers, which has been idle for a long time, and April 1 they will open a large tool manufacturing plant. They will also add special machinery for the repairing of automobiles.

Hammondsport, N. Y.—G. H. Curtiss' business has been taken over by the G. H. Curtiss Mfg. Co., with a capital of $40,000. Mr. Curtiss will be the president and manager, the product of the company consisting of engines, both double and single cylinder; complete motor cycles and side cars.

RECENT INCORPORATIONS AND CAPITAL INCREASES

Wilmington, Del.—The Universal Power & Promotion Co. has been incorporated with a capital stock of $100,000 to manufacture automobiles under patents held by C. A. A. Taylor and E. O. Brown, both inventors, of Wilmington.

Pontiac, Mich.—The Hess-Pontiac Spring & Axle Co. has been incorporated with a capital stock of $145,000 to succeed the Vehicle & Improvement Co. and the Pontiac Axle Co. The company will make a specialty of automobile springs.

Cleveland, O.—The Glenville Garage & Co. has been organized to handle automobiles and parts. Capital stock, $10,000.

New York—The Olborah Auto Co. has been incorporated with a capital stock of $3,000.

Albany, N. Y.—The W. J. Willard Co., to engage in the manufacture of automobiles, has been incorporated with a capital stock of $100,000.

Boston, Mass.—The Technical Automobile School of New England has been incorporated with a capital stock of $5,000.

New York City—The 35 per cent Automobile Supply Co. has been incorporated to deal in and manufacture automobile supplies. Capital stock, $40,000.

Troy, N. Y.—The Auto Exchange of Albany and the Troy Garage Co. have filed articles of incorporation with the county clerk, showing that the capital stock of $500 have in both cases been paid in.

Owego, N. Y.—The New Amsterdam Motor Co. has been incorporated with a capital stock of $75,000.

Brooklyn, N. Y.—The Prospect Construction Co. has been incorporated to maintain an automobile garage. Capital stock, $6,000.

Nyack, N. Y.—The Rockland Motor Co. has been incorporated with a capital stock of $5,000. It will sell automobiles and maintain a general garage business.

Detroit, Mich.—The Modern Motor & Machine Co. has been incorporated with a capital stock of $15,000.

Montreal, P. Q.—The Automobile Import Co. has been incorporated with a capital stock of $20,000, to manufacture all kinds of automobiles, vehicles, etc.

Newark, N. J.—The Motor Vehicle Co. has been incorporated with a capital stock of $5,000, to manufacture automobiles, vehicles, etc.

Trenton, N. J.—The Automobile Speedway Co. of New Jersey, of Jersey City, has been incorporated with a capital stock of $100,000.

Columbus, O.—The Auto Car Co. of Cincinnati has been incorporated with a capital stock of $25,000. The company will build a concrete garage at Eighth and Sycamore streets.

New Brunswick, N. J.—The Middlesex Motor Co. has been incorporated with a capital stock of $50,000. The company will construct automobile garages and also lease and build automobiles.

Cleveland, O.—The Glenville Garage & Machine Co., of Cleveland, has been incorporated with a capital stock of $5,000.

Chicago—Incorporation papers have been granted the Biddle-Murray Mfg. Co., which will manufacture automobiles. The capital stock is $10,000, the incorporators being Ralph M. Shaw, J. D. Black and Edward C. Maher.

Moline, Ill.—The Deere-Clark Motor Co. has been incorporated by C. E. Drury, R. S. Blakemore and W. E. Clark for the purpose of manufacturing motor cars; capital stock, $100,000.

Baltimore, Md.—The Sheddan Mfg. Co. has been incorporated. The company is to make air cushions and to deal in all kinds of vehicles, in addition to maintaining a garage. The capital stock is $15,000.

Ossining, N. Y.—Among recent incorporations is that of the Hutchinson Electric Horn Co., with a capital stock of $20,000.

Newark, N. J.—The Greene Motor Car Co., of Newark, has been incorporated with a capital stock of $100,000.

Omaha, Neb.—The Deright Automobile Co. has been incorporated with a capital stock of $50,000. The company has a new garage in course of construction at Nineteenth and Farnum streets.

Lansing, Mich.—The Motor Car Co., of Detroit, has been incorporated with a capital stock of $150,000.

Trenton, N. J.—The Summit Garage has been incorporated with a capital stock of $25,000, and will engage in the manufacture and renting of automobiles, motor vehicles and bicycles.

Albany, N. Y.—The Brewster Automobile Co. has been incorporated with a capital stock of $10,000.

Guthrie, Tex.—The Southwestern Transit Co. has been incorporated with a capital stock of $35,000 to operate an automobile line. The incorporators are E. R. Ames of Prague, and Shirley A. Bradish and Thomas J. Lowe of Guthrie.

Guthrie, Tex.—The Automobile Tire Repair Co., of Guthrie and Chicago, has been incorporated with $10,000 capital by W. F. Maloney, Robert A. Wells, Charles R. Tichenor and M. M. Chesrown, of Chicago, and G. V. Pattison and H. W. Pentecost, of Guthrie.

Quincy, Ill.—The Quincy Automobile Co. has been incorporated for $50,000 to manufacture automobiles and parts. J. W. Cassidy, H. Chatten and W. H. Govert are the incorporators.

Charlotte, Mich.—The Dolson Automobile Co. has been incorporated with a capital stock of $100,000.

Digitized by Google

SYRACUSE, N. Y., LIVERYMAN SEES TREND OF AFFAIRS AND PREPARES TO STAY IN BUSINESS

Takes on the Glide—The Holmes-Schmidt Motor Co., 1502 Michigan avenue, has taken the Chicago agency for the Glide.

Located in Erie—Jacob Roth is erecting a $70,000 garage at Erie, Pa. It will be a two-story affair in the center of the town, the building being of steel construction.

Whitney Promoted—R. A. Whitney, a general salesman for the Glide the past year, has been appointed sales manager in charge of the Glide agencies by the Bartholomew company.

Going to Paris—J. S. Josephs, manager of the Auto Import Co., New York, will sail on the 21st to attend the Paris show and see to the shipment of the entire Rochet-Schneider exhibit, which he has bought outright for display at the Madison Square garden show.

Gives Glad Hand—The Rhode Island Automobile Club on Thursday night last gave a farewell smoker to A. E. Hughes and W. J. Foss, who have secured the Philadelphia agency for the Cadillac and Pierce Arrow automobiles and have opened an establishment at the northeast corner of Broad and Race streets in the Quaker city.

Pope-Hartford Test—A tour which will test out the new Pope-Hartford four-cylinder car and which will also be a selling expedition was commenced on Sunday by Wilbur C. Walker, of the Pope company's Hartford office. Walker will drive the car to Springfield, Troy, Albany, Utica, Syracuse, Rochester, Buffalo, Cleveland, Erie, Pittsburg, Toledo, Indianapolis, Chicago and possibly to St. Louis. N. P. Bernard is chauffeur and accompanying Mr. Walker are F. L. Buckbee and W. H. Kellar, salesmen of the Pope company.

Gives Up Branch—The Pope Mfg. Co. has recently discontinued its branch at Providence, R. I., and disposed of its stock of cars and parts there to the Rhode Island Motor Car Co., which will have the agency for the Pope cars the coming season. The Pope building on Snow street will soon be vacated and the greater portion of the machinery and fittings shipped to Hartford. Secretary Wilbur C. Walker of the company, speaking of the changes, states that it is now the policy of the company to discontinue, rather than increase its branches throughout the country, as the demand is now almost greater than the supply, and the company has no difficulty in disposing of its allotments to its agencies.

Now Renault Secretary—H. B. Miller, formerly in charge of the sales department of Smith & Mabley, is now the secretary of the Renault American branch.

E. V. C. Co. at Show—By the arrangement of space at the New York show the Electric Vehicle Co. is to have three exhibits—gasoline cars in the main hall, electrics in the restaurant, and delivery wagons and trucks in the basement.

Plant Destroyed by Fire—The plant of the Central Mfg. Co., of Connersville, Ind., maker of buggy and automobile bodies, was totally destroyed by fire last week. The loss is estimated at $60,000, with $30,000 insurance. The factory employed 150 men.

Hungary Hungry for Cars—The trade in automobiles in Hungary, although little developed as yet, has lately made a distinct advance. The local industry is not yet in a position to compete against foreign importations, among which American cars are figuring in the import returns.

Spreading Out—The New Process Raw Hide Co., of Syracuse, N. Y., has just completed a two-story brick addition, which gives it 10,000 feet more floor space. It is also installing additional turret lathes, drills, grinders, spur gear cutters, bevel gear planers and other machinery. It is expected that this will increase the company's capacity 75 per cent.

Delayed by Strikers—Strikes in the building trades now promise delays in the new garages building in Hartford. S. A. Miner does not believe that he will get into his new quarters until April. The new addition to the E. V. Co.'s plant has been ready for 2 months, but the bridge workers' strike has prevented the erection of the roof, the girders for which are now on hand.

Franklin Agents—Planning for the 1906 campaign, the Franklin people have again closed with R. C. Hamlin to represent them in Southern California, Gus Boyer in San Francisco, A. R. Bangs in Boston, the Quaker City Automobile Co. in Philadelphia, Cook & Stoddard in Washington, D. C., and the Standard Automobile Co. at Pittsburg. The metropolitan district will be cared for by the Decauville Automobile Co. Sales Manager C. A. Benjamin is now in Chicago debating whether or not it would be advisable to open a branch or continue with an agency.

Page's Trip—Carl Page, manager of the New York branch of the White Sewing Machine Co., will sail for Europe on Saturday with his mother. After a tour of Italy and southern France he will visit the Paris show.

Hurlbert Enthusiastic—W. H. Hurlbert, manager of the New York branch of the Packard Motor Car Co., on the basis of present demand and orders, expects to dispose of fully half of the 1906 allotment by January 1. This wil be but a repetition of his experience with the Packards during the past season.

Now in Baseball—L. A. Mitchell, associate of Guy Vaughan in the 1000-mile record ride at the Empire track, companion of A. W. Church on the Glidden tour and salesman for some time in the employ of the Decauville Automobile Co., has resigned his position with the Decauville company to accept a position as secretary of the New York baseball team.

Hay Ford's Man—Thomas Hay, formerly of the Hayden Automobile Co., of Chicago, has been named as manager of the Ford branch in the windy city. C. C. Meade, temporarily in charge, has gone to the Pacific coast on a business trip. The Ford people will locate permanently at 1440 Michigan avenue as soon as the building which is to be built for them is completed.

Italians Busy—Reports from Milan, Italy, say the shipments to New York by one firm the past year, ended June 30, amounted to over $124,000. It is reported that this same firm expects to export more than double that amount to New York this year. Some of the Italian firms announce they have more orders than they can fill, orders being received only on condition that they be completed at some future time.

Department Store In It—Bacon, Chappell & Co., of Syracuse, N. Y., who conduct a department store, will enter the automobile business next season, and have arranged for the agency of the Rambler. They expect to secure some good location near the business section and conduct an up-to-date garage. The department will be managed by William Cranston, formerly with R. M. Cornwall & Co., in South Salina street. The Cornwall company will go out of the business at the close of the present season and devote its attention to the manufacture of gasoline engines.

Progressive Livery Man—John W. Cronin is a Syracuse, N. Y., liveryman who recognized the signs of the times and proved equal to the demands which progress made upon him. At the beginning of the 1905 season he erected a garage by the side of his livery building and has conducted both successfully. If anything the automobile business has encroached somewhat on the other branch, for Cronin this fall and winter will put into service two automobile hacks. Next season he expects to have a sightseeing vehicle and several automobiles for rental purposes. He took the agency for the Reo car, which he will continue next season. Cronin started in the livery business in a small way in 1878,

Digitized by Google

and from that time the business has increased steadily, until it is now the largest in Central New York.

Ollier Changes—L. J. Ollier, formerly with the Cadillac and later with Devlin & Co., is now in charge of the sales department for Ralph Temple, Chicago, who handles the Reo, Panhard and Premier.

Has Changed—F. S. Duesenberg announces he is no longer connected with the Iowa Auto & Supply Co., of Des Moines, Ia., having gone into business for himself at 915 Grand avenue under the name of the Duesenberg Automobile Co.

Old Line Suits—The Auto Shop of Paterson, N. J., has signed its old line for 1906. This includes Columbia gasoline and electrics, the Knox and White Steamer. President Andrew T. Fletcher may take on one more line which does not conflict with the other three.

Kelsey Moves—Cadwallader W. Kelsey, Philadelphia agent for the Maxwell car, left the Quaker city last week to assume his new duties at the Maxwell factory at Tarrytown-on-the-Hudson, N. Y., where he will be the general sales manager. He will be succeeded in Philadelphia by William P. David, well known throughout New England in connection with the Maxwell line of cars.

Kiser Bobs Up—Earl Kiser is expecting to break into the trade end of the game in Dayton, O., now that he has fully recovered from the Cleveland accident. The rosy-cheeked little driver is able to use his artificial leg without the use of a cane, and can drive an automobile in a clever manner. He will start in business as soon as he finds a location, taking with him John S. Johnson.

Signs Long Lease—C. B. Rice, New York agent for the Baker electrics, has signed a 10-year lease for a big building now nearing completion at Broadway and Seventy-seventh street, which he will use as an exclusive garage for electrics. It will have 35,000 square feet of floor space, sufficient for the storage of 300 machines. The present salesroom at Broadway and Fifty-ninth street will be continued for the exclusive exploitation of the Baker product.

Buy In—Mohler & De Gress have purchased the plant of F. A. Seitz at Long Island City, N. Y., and will enlarge the business.

Sixth Season—The Toledo Motor Car Co. will again handle Pope-Toledo cars next year, having handled them for the past five seasons.

Breaks in in Jersey—The Greene Motor Car Co., of Newark, N. J., has taken northern New Jersey for the Locomobile and the Smith & Mabley line of imported cars—the Mercedes, Panhard and Renault.

Renew With Henshaw—During the past week Harrington's Automobile Station, of Worcester, Mass., and C. K. Smith, New London, Conn., have renewed their contracts with C. S. Henshaw, the New England Thomas Flyer representative.

In a Merger—The American Motor & Cycle Co., of Battle Creek, Mich., is the result of a merger of the Currie Motor Cycle Co. and the Losey-O'Riley Co. The place will be located at 35 East Main street. C. G. Currie is president of the new company.

Stern Sells Out—Emil Stern, associated with Norris M. Mason in the American agency of the Leon Bollee cars, has sold out his interest to his partner, who will continue the business at 32 West Thirty-second street, New York. Mr. Stern will shortly return to France and again be associated with the Leon Bollee concern.

New in Chicago—The Kelley-Hunter Co., new in Chicago trade, has taken the Northern agency for Chicago and surrounding territory. The president of the company is W. M. Thompson, with Paul Kelley, of the firm of Kelley, Maus & Co., treasurer. The active members of the agency are Clinton Hunter, secretary and manager, and W. G. Tennant, vice-president. The latter has been connected with the Chicago branch of the Winton and later with the Haynes people. The new company is located on the second floor at 1449 Michigan avenue, but after February 1, when the McDuffe Automobile Co. moves out, it will occupy the entire building.

Fay Goes with Ford—Charles E. Fay has concluded a contract with the Ford Motor Car Co. whereby he is to assume the management of the Boston branch.

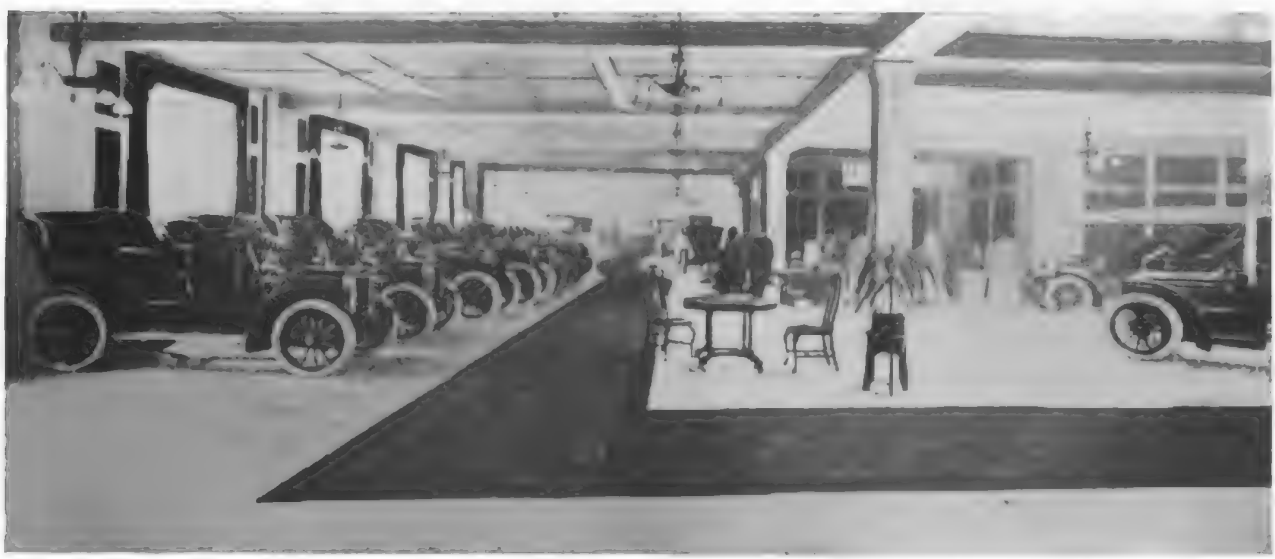
Unwin Connects—Harry Unwin, former manager of the Harrolds Motor Car Co., of New York, has taken the superintendency of the selling department of the metropolitan district branch of the White Sewing Machine Co. under Carl Page, manager.

Up a Notch—A prominent stove manufacturer confesses that the automobile industry in Detroit has passed the stovemakers in the Michigan city. For the year just ended the manufacturers of car wheels led with a total output worth $13,000,000, with the motor trade next with $11,000,000.

Argyll Salesroom—The British trade is proud of the new London depot for the Argyll cars, opened at 17 Newman street, Oxford street, W. In addition to the handsome display of cars and a repair shop, another dealer, Alfred Dunhill, has a branch establishment in the place for the purpose of retailing his motor clothing.

Packard Prompt—The Packard Motor Car Co. reports that in October it commenced the delivery of its 1906 Packard 24, both touring car and runabout, and that it expects to keep as closely to its shipping schedule as it did with model N, which scarcely varied a day throughout the season. The new model worked out so well that the Packard purchasing department was able to send out its orders 4 months ago.

Big Order Half Filled—More than half of the big order of the new electric broughams building for the New York Transportation Co. has been completed by the Electric Vehicle Co., of Hartford. The rig is fashioned somewhat after the English type of brougham, but is driven with twin motors and side chains and is fitted with solid tires. The resistance controller is mounted beneath a hood, readily accessible, and the battery is underslung.



Sample of a Modern Motor Car Salesroom in London, Where the Argyll Cars Are Exhibited and Sold

Digitized by Google

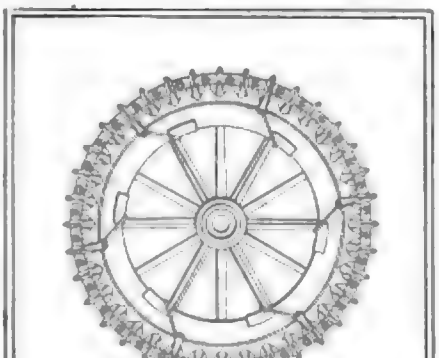
Current Automobile Patents

Combination Truck—No. 803,010, dated October 31; to Elmer P. Morris, East Orange, N. J.—The invention relates to a commercial truck, with power furnished by a gasoline engine. This engine furnishes the power for driving an electric generator and the generator in turn supplies current for electric motors on each of the front wheels. The front wheels, besides serving to propel the truck, are used for steering, the feature of the steering arrangement being that an electric motor does the work of turning the steering wheels. A vertical steering column with wheel is located in the front of the driver and on the bottom of the column is a sprocket connected by chain belt with the steering motor, the connection being such that a movement of a steering wheel to the right brings the electric steering motor into operation and turns the wheel in that direction, and an opposite movement of the hand wheel gives the opposite turn to the steering road wheels. The amount of turn given the road wheels is dependent on the amount of turn given the steering wheel, the speed of the electric motor being proportioned to the turn of the steering wheel. The same inventor has another patent, successively numbered, relating to the construction of the axles of his truck. The axle is a vertical framework of metal divided into three parts. Through the center of it pass the half axles carrying each of the road wheels, and on each half is a large spur gear to which the motors are connected.

Tire Cover—No. 803,326, dated October 31; to James M. Carpenter, Millersburg, O.—A novelty is presented in the device referred to in this patent, which is a cover for the tread of pneumatic tires for automobile wheels. The tread consists of metal links, pivoted together, each link having a concave under surface for resting on the tire tread and an upper surface of a ridge-like projections placed crosswise of the link and reaching across the tire tread. These projections are designed for overcoming slipping on muddy roads or in snow. Every seventh link has short arms on either side extending radially to the edge of the steel rim, where a clevis, which encircles the wheel rim and rests against one of the spokes, has its ends pivoted. The use of the clevis is not only to retain the tread in position but to prevent its slipping on the tire. No arrangements are provided for preventing its slipping on the tread when the wheels are reversing, but having it clamped to the spokes would serve for this.

Folding Foot Board—No. 802,995, dated October 31; to Harry A. Knox, of Springfield, Mass.—This invention is a foot board for use on the front seat of a runabout car and is so constructed that when the seat is not in use, the foot board swings upward and forms the front of the car body. This swinging movement is accomplished by having the foot board hinge at the bottom of the frame work of the car and a rigid lever bolted to the center of the foot board at either end. Connected with the lever is a link, attached to the body which is so connected as to give a toggle joint arrangement to the other parts.

Mixture Regulator—No. 803,289, dated October 31; to Thomas B. Jeffery, of Kenosha, Wis.—The device referred to relates to the supplying of mixture for a gasoline engine. A pipe leads from the carbureter to the inlet valve and in this pipe, intermediate of these parts, is an inlet valve for admitting outside air into the pipe. Both the gas inlet valve to the motor and the air in the valve are controlled by a ring beneath the steering wheel, the connection between the two valves and this ring being such that the air inlet valve opens as the gas inlet closes and a trip is furnished for disengaging the air inlet valve, permitting it to be closed without reversing the gas inlet valve movement.



CARPENTER'S TIRE COVER

Flat Inner Tube—No. 803,345, dated October 31; to Thomas B. Jeffery, of Kenosha, Wis.—The invention is a pneumatic tire in which the ordinary round inner tube is replaced by a flattened one, the construction of the tire casing giving it this shape. On the sides of the wheel rim are recesses in which the lips on the outer casing repose and on the tread part are three reinforcements to protect the tread and prevent side slipping. Over the outer face, or tread, of the wheel rim is a plate, held by screws, for preventing the wheel rim injuring the inner tube.

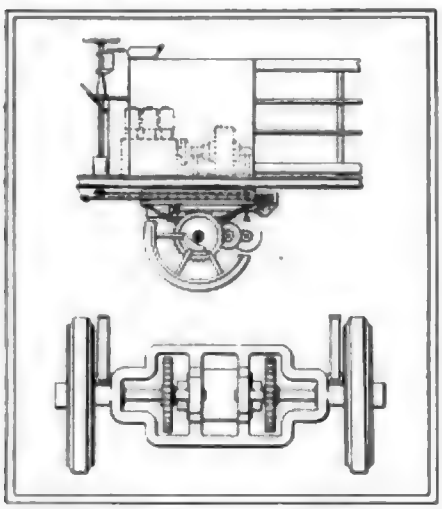
Combination Tire—No. 803,500, dated October 31; to Winnifred J. and James R. Mitchell, of Lyons, Mass.—The inventors have what can be called a combination tire, being a pneumatic tire protected by a circle of solid rubber. The tread of the wheel rim is grooved to receive the air chamber and on either sides of it are circular ring flanges bolted to the sides of the rim and having shoulders on the outer edges, on which rests an ordinary solid rubber tire. The air chamber is thus enclosed between the metal rims on either side and the rim and the solid tire, the latter being retained by bolts passing through the flange rings. The same inventors have another design of combination tire following similar lines of construction, except that a rubber ring encircles the air chamber and encircling and enclosing the ring is a grooved tread part, held to the ring flanges by cross bolts and, of course, nuts.

Single Tube Tire—No. 803,510, dated October 31; to William A. Sankey, of Sutton, England—The inventor has a single tube automobile tire which is slotted like the ordinary tire casing and has clincher style of lips for retaining it in position. As an aid to the tire lips, bolts pass through the rim radially, the heads, within the tire, resting on a broad circular band that rests on the rim and overlaps on the tire lips, thereby holding them and serving also to retain the air.

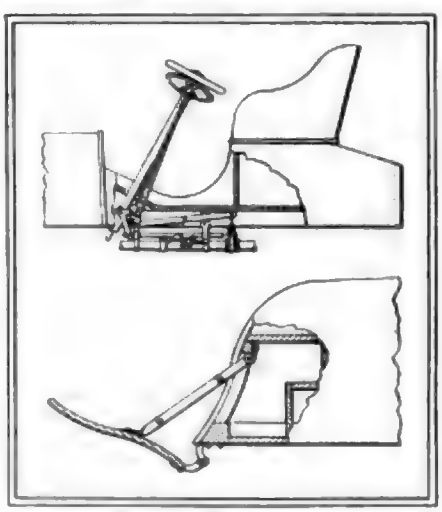
Fisk's Tire—No. 803,053, dated October 31; to Henry G. Fiske, of New York city—In his pneumatic tire, the air tube is of inverted U shape, and to render the tire practically puncture proof a thick felt tread is used. The entire casing is almost double as heavy as the ordinary casing and the tire rests between opposing flanges, which are aided in retaining it in position by a center wire, as used on buggy wheels. The air valve does not pass through the wheel rim but is located in the side and passes through on the flanges.

Tire Fastening—No. 802,702, dated October 24; to Thomas Midgley, of Columbus, O.—The invention relates to the fastening of a pneumatic tire to a rim, the tire having clincher rims but the rim of the wheel made flat with a metal ring with low radial flanges surrounding it. The tire does not rest firmly on the rim, but rather on two slightly crescent-shaped pieces, one under each tire lip. Between these pieces and the tire is a strip of leather or rubber, filling the spaces between the crescents and providing a floor for the tire. To hold the tire in place two endless rings are used, one on each side of the tire, each ring of wedge cross section so that the edge of the wedge can be forced between the low flanges on the wheel and the crescent pieces, thereby pushing the crescents closer together, forcing the leather strip up against the air tube. The larger ends of the wedge-shaped rings bear against the tire sides. The tighter the tire is inflated the greater will be the pressure on the side rings, and consequently the greater downward pressure on the crescent pieces, thus holding all parts rigidly in place.

Semi-Pneumatic Tire—No. 802,806, dated October 24; to Henry G. Fiske, of New York city—The tire described is not strictly a pneumatic, in that the air chamber is not more than half the size of the ordinary air tube, and the tire casing is double the ordinary thickness. The air tube resembles a figure 8, placed crosswise in the center of the casing with the space above and below it filled with cross layers of rubber and canvas to resist puncturing. The casing part, instead of being one or two thicknesses of rubber and canvas vulcanized together, is an outer tube of rubber with four or five smaller leather or canvas tubes within it. The tire is a single tube fastened to regular trough-shaped rims.



MORRIS' COMMERCIAL TRUCK



JEFFERY'S CONTROL—KNOX'S FOOT BOARD

Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

WHEN THE VEHICLE STOPS—Coming events usually cast their shadows before, and the experienced man in most cases has warning of trouble before it happens. If he heeds this warning he remedies the difficulty and prevents the trouble. To the inexperienced man this is not possible, for he does not hear or feel the warning, because he has not learned what is right and what wrong, or if he is conscious of it he may not be able to locate it, so that in many cases his roadside troubles begin when the vehicle stops. If this happens when climbing a hill, do not withdraw the clutch until the brake is set. As the clutch is withdrawn make sure that the brake holds the vehicle. Withdrawing the clutch before applying the brake, or with a faulty brake, may result in running down hill backward. When the low or hill climbing gear is engaged, the clutch will hold the vehicle safely.

With the clutch released, apply the starting crank to see if the motor turns freely. If it does, go through the starting operation and see if it will start. If it does, the cause of stopping is not in the motor, and must be looked for elsewhere, unless the motor was actually overloaded and stopped because of sheer inability. If it does not start, see that the spark is all right, then that there is fuel, and neither too much nor too little. If it still refuses, the mechanical part, like the timing of the valves and the spark, should be examined. These, however, are not likely to be wrong without the trouble being apparent. If the motor is not free, it is either overheated or has a seized bearing, as explained in the paragraph on lubrication. If overheated it will usually loosen on cooling. Work oil freely on to the tight piston and examine the water circulation. Simple things sometimes cause trouble. A loose wire in the electric system, a loose joint in the fuel pipe, an empty gasoline tank, a stopped air vent therein—all cause roadside stops, and even experts look long and hard sometimes before locating the trouble.

Accidentally knocking off the switch, may, because so simple and unlooked for, cause a longer stop than a broken chain, which is found at once and repaired. Wires and similar connections should not be hidden, but should be kept in plain sight, as far as possible, where, by a single glance, one may see whether or not they are in proper condition. Each morning one should practice giving the vehicle a rapid inspection, covering all vital parts. Practice in making this inspection enables it to be made rapidly and thoroughly on the road, and thus assists in locating road troubles quickly.

Having determined that there is no fault with the motor, next move the vehicle. One should frequently do this, so as to know whether the vehicle runs easily or not. He will then know whether or not the stoppage was caused by some fault in the bearings, the brakes, the steering, or similar parts. A tight bearing may actually stop the vehicle and will quickly give the impression that one has a weak and faulty engine. A brake band rubbing will do likewise. Many an automobile user today is paying needlessly large gasoline bills, to say nothing of increased repairs, simply because his brakes continually drag. If the steering wheels are not parallel, the tires slip sidewise on the ground, which soon wears them flat and also adds considerably to the labor of the motor. Of course, if the difficulty is found in the vehicle it must be remedied. If neither in the motor or vehicle, next examine the transmission. A stripped gear, a sheared key, a broken clutch lever, or some similar cause may permit the motor to run and yet fail to drive the vehicle, but in this, as in other things, reasoning from cause to effect, with careful inspection, will locate the trouble, and having located it, in most cases there will be some temporary expedient by which it can be patched up sufficiently to permit progress.

Fix Before Leaving—Again, we repeat, a stitch in time saves nine, and roadside troubles can be largely avoided by attending to defects when they first show signs of existence. If the motor is working badly do not wait for starting troubles, but fix it before leaving it. If everything is in good order, starting troubles will seldom exist. At the risk of being thought tiresome, we repeat that the ignition should be carefully inspected. Many an expert looks for trouble everywhere else, assuming that the ignition is all right, when as a matter of fact, the ignition only is to blame. A spark may look large and yet fail to do its duty. Many a motor has been condemned unjustly because of faulty spark. Many a man has assumed, because he has just paid for a set of fresh batteries, that the spark must be all right. Batteries lose their strength easily. They sometimes become valueless standing on the shelves. A file or screw driver accidentally laid on top will in a few minutes ruins the life out of them. Many things of this kind can damage the spark. Therefore, above all things, make sure of the spark in starting trouble, and if trouble still continues, do not waste much time elsewhere until you have made doubly sure that the spark is right. With a magneto or dynamo there is no chance to run down over night, and the spark that gave satisfaction in the evening may with reasonable assurance be expected to do likewise in the morning.

Tool Kit—In trouble, one's best friend is the tool kit. Many things can be accomplished without tools, but tools are labor-saving devices of the most pronounced kind and every vehicle should be equipped with an outfit sufficient to adjust, or even tear down and assemble the complete vehicle. Some vehicles require special wrenches, whereas others are so designed that almost everything can be manipulated with common tools, such as the monkey wrench and screw driver. The user should know what tools his vehicle needs and provide accordingly. For unhandy nuts, end wrenches are advisable. One or more pairs of pliers, suitable for cutting and bending wire, and also for holding round as well as flat objects, are extremely handy. A cold chisel, a file, a punch for knocking out cotter pins or chain rivets and several sizes of iron wire should be carried. The size used on ordinary baled hay can be picked up at almost any stable and is very handy. Broom wire is also usually easy to find. This is worth remembering when there is something to be tied together. A gasoline squirt can, a supply of cylinder oil and a can of thinner oil, commonly termed engine oil, should always be at hand. It is also advisable to have a small can of graphite and one containing heavy grease. A tire pump will be included without doubt. If batteries are used an ammeter or voltmeter, or both, are decidedly valuable. For storage batteries a densimeter is sometimes needed, but this is seldom carried on the road. A similar device for testing gasoline is also a valuable addition to one's tool outfit. Some waste for cleaning purposes and with some vehicles a squirt gun for handling oil is advisable. A tire repair outfit ought to be a constant companion and this should include a ball of strong cord, 1-16 to 1-8 inches in diameter, with which a bursted tire may be wrapped in place. After wrapping this cord ought to be protected by wrapping it with tire tape, which keeps out the dirt and prevents the cord from wearing, while the cord furnishes the strength. There are short shoes provided for this purpose that can be laced in position on the outside of the tire, or a canvas strip may be placed around the air tube and the ends either laced together, or drawn out over the edges of the rim, where the inflation will generally hold them. This device will prevent the air tubes from being damaged, but is more trouble than the outer covering. A wrapping of tire tape must be provided in any event to avoid damage to the canvas and inner tube. The tool kit should also include any extra parts that may seem advisable to carry for the purpose of replacing those that are known to be likely to give trouble, as, for example, extra spark plugs, extra insulations, some insulated wire and light springs, such as valve springs, that may break without warning. The manufacturers of a vehicle or any user thereof will usually willingly advise on these points but every car driver must be his own mechanic for roadside troubles and repairs.

EDITOR'S NOTE — This is the sixteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.

CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.

JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.

FRANK A. EGAN, Secretary, 123 Nassau St., New York.

FREDERICK B. HILL, Treasurer, 23 Binford St., Boston.

National Headquarters Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

APPOINTMENT

Under the provisions of section 1 of article 1 of the by-laws, Dr. John A. Hawkins, of Pittsburg, has been appointed to fill the office of vice-president of the league in place of S. W. Merrihew, resigned. Mr. Merrihew was one of the founders of the organization, and it is to be regretted that his personal business is so exacting as to prevent his giving further attention to league work. Dr. Hawkins, the new vice-president, has displayed the greatest ability in the building up of the Pittsburg board of consuls, and the present activity of the league in western Pennsylvania is inspired by our Pittsburg members, among whom Dr. Hawkins is a zealous leader.—ISAAC B. POTTER, President.

STATE DIVISIONS

This week will conclude the announcement of districts for most of the remaining important states. Those hereafter to be announced will follow from week to week as conditions require. The time is now at hand when the active efforts of many members will be called upon to take up and carry forward the work, which has hitherto been attempted in a most inadequate way by the officers at national headquarters. Plans are being completed for the election of officers for the important state divisions and the detail work of organization will be committed to these officers as soon as they are chosen.

KANSAS DIVISION

District 1, counties of Brown, Doniphan and Atchison; district 2, counties of Jefferson, Leavenworth, Wyandotte, Johnson and Douglas; district 3, counties of Miami, Franklin, Linn and Anderson; district 4, counties of Bourbon, Allen, Neosho, Crawford, Cherokee and Labette; district 5, counties of Wilson, Montgomery, Chautauqua, Elk and Cowley; district 6, counties of Butler, Greenwood, Woodson, Coffee, Chase, Lyon and Osage; district 7, counties of Shawnee, Wabaunsee, Jackson, Pottawatomie, Geary, Morris and Dickinson; district 8, counties of Riley, Clay, Cloud, Republic, Washington, Marshall, Nemaha; district 9, counties of Jewell, Mitchell, Osborne, Smith, Rooks and Phillips; district 10, counties of Marion, McPherson, Rice, Ellsworth, Saline, Lincoln and Ottawa; district 11, counties of Harvey, Reno, Kingman, Sedgwick, Sumner and Harper; district 12, counties of Stafford, Pawnee, Hodgman, Ford, Edwards, Pratt, Kiowa, Clark, Comanche and Barber; district 13, counties of Barton, Rush, Ness, Trego, Ellis and Russell; district 14, counties of Graham, Norton, Decatur, Sheridan, Rawlins, Thomas, Cheyenne and Sheeman; district 15, counties of Gove, Logan, Wallace, Greeley, Wichita, Scott and Lane; district 16, counties of Finney, Gray, Meade, Seward, Haskell, Stevens, Grant, Kearney, Hamilton, Stanton and Morton.

COLORADO DIVISION

District 1, counties of Arapahoe, Douglas and Elbert; district 2, counties of Teller, Fremont, Custer, El Paso and Pueblo; district 3, counties of Weld, Logan, Sedgwick, Phillips, Morgan, Washington and Yuma; district 4, counties of Kit Carson, Cheyenne, Kiowa, Lincoln, Otero, Bent, Prowers and Baca; district 5, counties of Montrose, San Miguel, Ouray, Dolores, San Juan, Montezuma, La Plata, Hinsdale, Mineral, Archuleta, Conejos, Rio Grande, Costilla, Huerfano, Lasanimas; district 6, counties of Saguache, Gunnison, Chaffee, Park, Lake, Eagle, Summit, Garfield, Mesa, Delta and Pitkin; district 7, counties of Rio Blanco, Routt, Larimer, Grand, Boulder, Gilpin and Clear Creek.

ALABAMA DIVISION

District 1, counties of Mobile, Baldwin, Escambia, Covington, Conecuh, Monroe, Washington, Clarke, Choctaw, Marengo, Wilcox, Butler, Dallas and Autauga; district 2, counties of Geneva, Henry, Dale, Coffee, Crenshaw, Lowndes, Elmore, Montgomery, Pike, Bullock, Russell, Macon and Lee; district 3, counties of Sumpter, Greene, Pickens, Tuscaloosa, Hale, Perry, Bibb, Chilton, Shelby, Jefferson, Walker, Fayette and Lamar; district 4, counties of Coosa, Tallapoosa, Chambers, Randolph, Clay, Talladega, St. Clair, Calhoun, Cherokee, Etowah, Blount, DeKalb, Marshall, Cullman, Morgan, Madison, Jackson, Limestone, Lauderdale, Colbert, Lawrence, Franklin, Winston and Marion.

TENNESSEE DIVISION

District 1, counties of Crockett, Gibson, Dyer and Weakley; district 2, Fayette, Shelby, Tipton, Haywood and Lauderdale; district 3, Carroll, Humphreys, Benton and Henry; district 4, Hardeman, McNairy, Hardin, Chester, Decatur, Henderson and Madison; district 5, Dickson, Houston, Cheatham, Stewart and Montgomery; district 6, Hickman, Perry, Lewis, Wayne and Lawrence; district 7, Davidson, Robertson, Macon, Sumner, Wilson and Trousdale; district 8, Williamson, Maury, Marshall, Giles and Lincoln; district 9, Rutherford, Cannon, Bedford, Coffee, Moore and Franklin; district 10, Clay, Pickett, Overton, Jackson, Smith, Putnam, White, Van Buren, Warren, Morgan, DeKalb and Grundy; district 11, Cumberland, Loudon, Roane, Hamilton, James, Meigs, Rhea, McMinn, Bradley, Bledsoe, Sequatchie and Marion; district 12, counties of Campbell, Scott, Union, Claiborne and Anderson; district 13, counties of Jefferson, Sevier, Blount, Monroe and Polk; district 14, counties of Hancock, Grainger, Hamblen, Cocke, Unicoi, Carter, Johnson, Sullivan, Hawkins and Greene.

KENTUCKY DIVISION

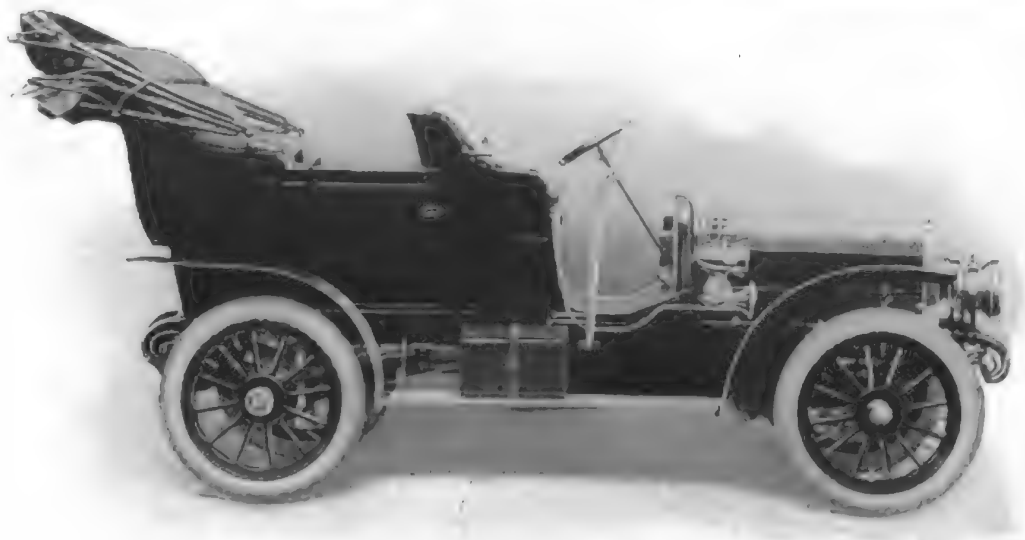
District 1, counties of Fulton, Graves, Hickman, Carlisle, Ballard and McCracken; district 2, counties of Calloway, Marshall, Livingston, Trigg, Lyon, Caldwell and Crittenden; district 3, counties of Hopkins, Webster, McLean, Daviess, Henderson and Union; district 4, counties of Christian, Muhlenberg, Todd, Logan and Butler; district 5, counties of Ohio, Grayson, Hancock, Breckenridge, Mead and Hardin; district 6, counties of Simpson, Allen, Warren, Edmonson, Hart, Larue, Metcalfe, Barrey and Monroe; district 7, counties of Bullitt, Jefferson, Nelson, Spencer, Shelby, Oldham, Henry and Trimble; district 8, counties of Casey, Marion, Washington, Mercer, Boyle, Lincoln and Garrard; district 9, counties of Taylor, Green, Adair, Cumberland, Russell, Clinton and Wayne; district 10, counties of Pulaski, Laurel, Whitley, Knox, Clay and Bell; district 11, counties of Rockcastle, Jackson, Owsley, Lee, Estell, Madison, Lark, Montgomery, Powell and Wolfe; district 12, counties of Jessamine, Fayette, Woodford, Anderson, Franklin, Scott, Harrison, Nicholas and Bourbon; district 13, counties of Owen, Carroll, Gallatin, Boone, Grant, Pendleton, Campbell and Bracken; district 14, counties of Robertson, Mason, Fleming, Bath, Morgan, Menifee, Elliott, Rowan, Lewis, Greenup, Carter, Boyd and Lawrence; district 15, counties of Harlan, Leslie, Perry, Letcher, Knott, Floyd, Pike, Brethitt, Magoffin, Johnson and Martin.

CALIFORNIA DIVISION

District 1, counties of San Francisco and San Mateo; district 2, counties of Alameda and Contra Costa; district 3, counties of San Joaquin and Calaberas; district 4, counties of Santa Clara, Stanislaus, Tuolumne, Mariposa, Mono, Fresno, Merced, San Benito, Inyo and Madera; district 5, counties of Santa Cruz, Monterey, San Luis Obispo, Santa Barbara, Kern, Kings and Tulare; district 6, counties of Ventura, Los Angeles, San Bernardino, Riverside, Orange and San Diego.

Digitized by Google

WINTON



Up-keep Reduced by Winton Model K Lubrication

Why lubricate the bearings of a motor car?

Because two metal parts rubbing together would soon be ruined by friction and wear.

How does lubrication prevent friction and wear?

Proper lubrication forces oil into the bearings so that a film of lubricant separates the moving parts. Hence these parts do not touch and cannot wear. But the oil does wear.

So you must choose whether you want a car that wears out its expensive steel and brass bearings, or one that wears out oil, which is much cheaper and which preserves the costly bearings.

If the oiling system is faulty, the damage is quite as much as if you had no lubrication at all. Because then both the bearings and the oil are worn by friction.

Economy of Up-Keep demands a perfect system of lubrication.

The Winton Model K has the best system of lubrication on earth.

Oil is fed in adjustable measured quantity to each bearing. Therefore there is no waste of oil. But instead, all the while each bearing gets all the oil it needs.

This oiler feeds only when the engine is in motion. That also prevents waste.

Oil is fed at regular intervals, so that the bearings are never flooded and never starved, but are always sufficiently fed.

But suppose all other oilers had these same points of merit—which they do not have. There are still other exclusive features that make Winton Model K lubrication infinitely the most positive, reliable and expense-saving.

First—There are no valves to clog and get out of order.

Second—Oil is not fed by gravity nor by air pressure, but by mechanical force. Clogged tubes can stop gravity-fed oil before it ever gets to the bearings. And air pressure can leak so that the oil stands idle in the tubes. But the Winton Model K lubricator exerts mechanical pressure so powerful that even in the most frigid weather lubricating oil cannot stop in the tubes or in the reservoir (on the dash), but must reach the bearings and there prevent friction and wear. This Winton Model K oiler positively shoots oil to the bearings with the force of a catapult and the accuracy of mathematics. That means money saved to you.

No excuse for buying a car that ruins its own bearings, when you can get the perfectly lubricated, expense-saving Winton Model K.

WINTON MODEL K—Four cylinder, vertical, water-cooled; 4¼-in. bore; 5-in. stroke. Individual clutch transmission. Winton Air Governor. Winton Twin Springs. Lubrication, Ignition and Carburation simple and positive. $2500 f. o. b. Cleveland.
"The typical American motor car."—Americanized Encyclopaedia Britannica.

750 MILES WITHOUT ADJUSTMENT.

Mr. A. L. Stark, Elyria, O., says:
"During the last three weeks I have run my Model K Winton 750 miles. The greater part of this distance was covered in a trip to Rochester, N. Y., and return. The entire 750 miles have been made without a single adjustment and entirely without tire trouble. I find the Model K has ample power to take all but the steepest hills on the high speed. It runs very quietly. I am more than pleased with the way the car handles, and it certainly is a beauty."

The Winton Motor Carriage Co.

CLEVELAND, O. Member A.L.A.M. **U. S. A.**

Winton Transcontinental Exposition now en route to the Pacific Coast

CATALOG NO. 2 IS READY

Digitized by Google

The New Model 1906

Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuously told that each and every one of the 1906 cars is THE BEST CAR IN THE WORLD.

He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty—now more than ever "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.

ENGINE.	30-35 H. P., 4 cylinders, water cooled.
IGNITION.	Simms-Bosch Magneto—make and break spark.
TRANSMISSION.	Sliding train. 3 speeds forward and one reverse.
REAR AXLE.	Bevel gear drive, clutch driven hub. Ball bearings.
FRONT AXLE.	I Beam section. Ball bearings.
FRAME.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
WHEEL BASE.	108 inches.
WHEELS.	Imperial whalebone, grade A 2d growth hickory.
TIRES.	Continental 34x4.
VALVES.	Mechanically operated, inlet and exhaust interchangeable.
CARBURETER.	Float feed, requiring no adjustment.
BRAKES.	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
BODY.	Full aluminum, double side entrance.
EQUIPMENT.	Two head lights, 2 side lights, 1 rear light, 1 horn.

Price, $4,000

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinders—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

Price, $3,500

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR

The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for November and December delivery.

THE RAINIER COMPANY, Broadway, Cor. 50th St., **New York**

Boston Agents: MORRISON-TYLER MOTOR CO.

Good Agents wanted in unassigned territory.

Digitized by Google

Type G Four-cylinder Light Touring Car

Air-cooled shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Four or five passengers. Side doors. 88-inch wheel base. 12 "Franklin horse-power." 1,500 pounds. 35 miles per hour. $1800, f. o. b. Factory.

Full head and tail-light equipment.

Franklins are the most economical of all motor cars. Franklin air-cooling is one of the things that make them so.

Franklins use less oil than many water-cooled cars; perhaps more than some; probably about the average. But if they used twice as much as the biggest they would still be the most economical of all motor cars.

They save on fuel and repairs. They save enormously on tires.

Any car uses from ten to twenty times more gasoline than oil; and the price of a good tire would supply oil for over ten thousand miles.

It isn't economy to save a nickel and waste a dollar. Economy is in saving the dollar; and still getting the results.

In the famous Long Island Economy Test an air-cooled Franklin won the trophy in competition with fifteen other cars—nearly all water-cooled.

The winning Franklin carried 4 people 190 miles on less than a gallon of oil, less than 10 gallons of fuel; and at a total expense of $3.22.

The only car that came near this economy record was another air-cooled Franklin.

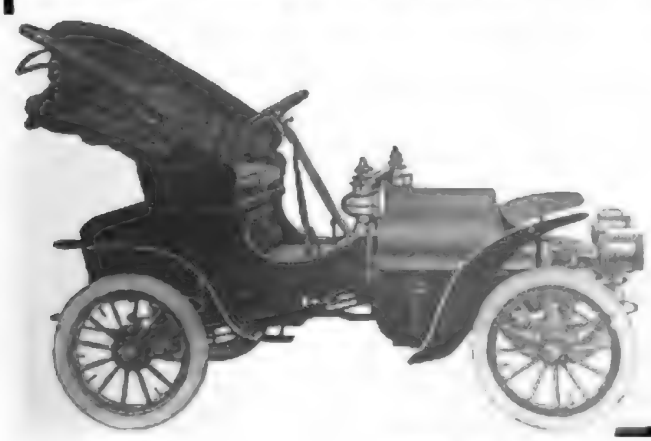
While, curious to tell, the one car which consumed precisely the same amount of oil and nearly twice as much fuel as the winner and required an expense of $5.28 to carry the same people the same distance—was made by the very manufacturers who are just now howling loudest against air-cooling economy.

People who live in glass houses should dress in the dark

4 Models for 1906

Send for the book

H. H. FRANKLIN MFG. CO., Syracuse, N. Y., *M. A. L. A. M.*



Type E. 4-Cylinder Runabout or Gentlemen's Roadster

Two passengers only. No tonneau can be attached. 12 "Franklin horse-power." Air-cooled engine. Wheel base 81½ inches—7½ more than last year. Roomier, more graceful; easier riding. Force-feed oilers on the dash. Change-lever inside the car and forward. Specially convenient when top is on. 1,100 pounds. One combination ironing which will accommodate canopy, cape or victoria top and glass front. 40 miles an hour. $2000, f. o. b. Factory.

Full head and tail-light equipment.

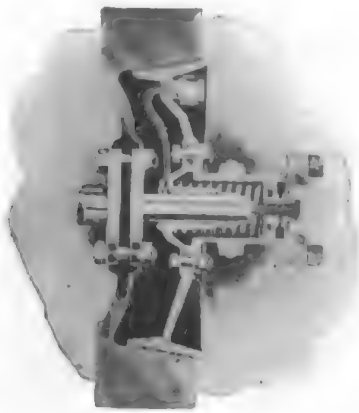
Digitized by Google

OLDSMOBILE

¶ Without going into minute details of construction of Model S (which we will gladly send you upon application), we will mention some of its features which stand out prominently, giving this machine its **marked individuality**

The Motor is of the four-cylinder, vertical, water-cooled type, developing 24 to 26 H. P. The cylinders are cast in pairs and are water-jacketed in such a manner that only the cylinders themselves are cooled, but the valves as well. All material used in the construction of the motor, as well as in every part of the machine, is carefully analyzed and tested, and each cylinder is thoroughly inspected. In common with the most up-to-date cars the motor may nearly always be started from the seat, thus doing away with the necessity of cranking. This is a very attractive feature.

The Crank Shaft is of special carbon steel and runs in long bearings. An oil pump in constant operation forces oil to all main bearings.



Cross Section of Clutch

The Transmission is of the sliding gear type, having three speeds forward and one reverse.

The Clutch is of the "dish pan", or cone type, fitted with leather surface, and a simple spring device which allows the load to increase gradually, thus doing away with any jerking in starting.

The Control is by single lever within easy reach of right hand. The whole transmission is enclosed in an oil-tight case and runs in oil bath.

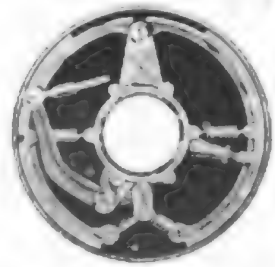
The Springs are of flexible, half elliptic type, giving exceedingly easy riding qualities. Length, 36 inches front, 48 inches rear.

The Ignition consists of four unit coils operated by dry cells, storage battery or magneto. The commutator is very accurate in its action and is instantly accessible—**accessibility of parts being a feature of this car.** The spark plugs are easily examined and connections quickly and positively made.

The Axles are fitted with Timken Roller Bearings throughout, and are made sufficiently heavy to withstand hard usage. **The rear axle is fitted with bevel gear drive, eliminating chain trouble.**

Oldsmobile Model S

The Wheels are 32 inch, equipped with 3½-inch pneumatic tires. Four-inch tires for unusual or extraordinary service can be had on special order.

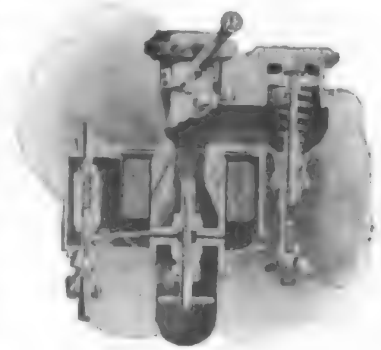


Cross Section of Rear Hub Brake

The Brakes. Each rear wheel is fitted with an effective toggle joint brake, which is absolutely positive in action, the large friction surface insuring a brake that brakes. Transmission brake is operated by foot lever.

The Steering Gear is of the "worm and nut" type, controlled by 16-inch wheel placed in very comfortable position. Spark and throttle control levers are located just below the wheel on right-hand side of the post. In addition to the regular throttle an accelerator pedal is provided, whereby speed may be momentarily increased.

The Carburetor is of the most efficient and best type. Particular attention has been given to this most important part of an automobile power equipment. Our new and improved carburetor, has several distinctive features; for instance, the gasoline nozzle instead of being placed in a mixing chamber by itself, runs up through the center of the float chamber. An auxiliary air inlet is also provided, which insures the maintenance of a perfect mixture. The result is a large decrease in fuel consumption and increased power.



Cross Section of Carburetor

The Water Circulation is by gear pump driven from crank shaft. Water is forced around water-jacket and out into the radiator mounted in front of car. Sufficient cooling surface has been provided, so that the temperature of the water is always kept well below the boiling point.

¶ Next week we will take up these and other distinguishing features of the Oldsmobile more in detail and show what they mean to you as a dealer or a buyer. Model "S" has a well-balanced, rangy exterior, distinctive and irresistably attractive. It has the equally well-balanced internal construction. It's the car that commands your attention on sight and holds your interest on demonstration. Orders are now being entered for these cars.

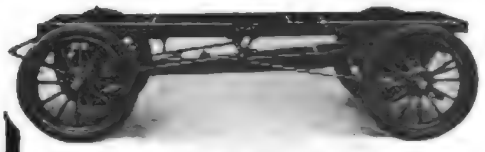
OLDS MOTOR WORKS

LANSING, MICH, U. S. A.

Digitized by Google

THE MARMON

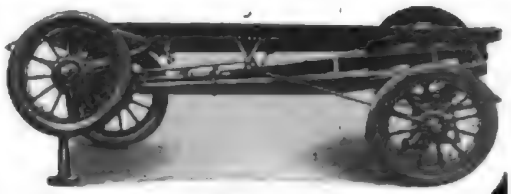
"A Mechanical Masterpiece"



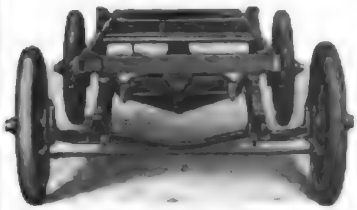
Side View—Normal Position.

No Jolts for Passengers

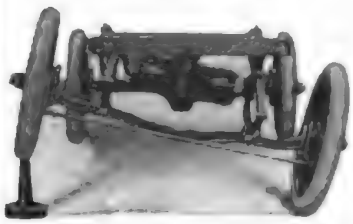
No Strains for Mechanism



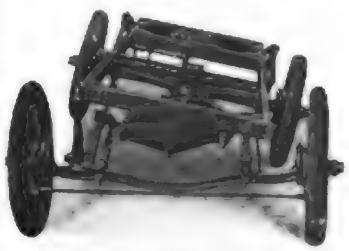
One Front Wheel and Opposite Rear Wheel Each Raised Over a Foot. Not a Strain Anywhere.



Front View—Normal Position.



Front Wheel Raised Over a Foot, Body Level.



Rear Wheel Raised Over a Foot, Lower Frame Level.

THESE pictures afford a clear view of the mechanical beauty of a car that is in all ways superb.

They show how easily the Marmon meets and overcomes the roughest road conditions, through its remarkable flexibility.

The first effect realized is the freedom from jolts and vibrations—a very luxury of motion over any and all roads, unknown in *any other car.*

More important still, no matter how rough the road, the running gear adjusts itself naturally to the ruts and bumps without subjecting the mechanism to binding or twisting strains. This is true of *no other car* regardless of price or prestige.

To determine how any other car would act under similar test, nail three legs of a chair securely to the floor and try to lift the remaining leg. Make some slight allowance in favor of the car because of its springs, and then charge against it the costly mechanism it carries and the great variety of roads over which it must travel, often at high speed. The entire mechanism is thus racked by twisting strains and ruinous friction in any such rigid construction, and not the least of the sufferers are the tires and the passengers.

The Marmon elasticity is supplemented by full elliptic springs but is primarily due to a patented exclusive feature.

Double Three-Point Suspension

Luxurious solid cast aluminum body on one frame, power plant on another frame, *each frame* suspended on three *pivotal* points. Raising or lowering one wheel does not affect the other wheels. No matter which wheels are raised, no matter how the two frames are tilted, the entire power plant and rear axle are *always* in perfect alignment. Straight and rigid shaft drive (without any sort of flexible couplings) delivers a greater percentage of power to the wheels than is possible in any other scheme of transmission.

The Marmon oiling system (fully patented) has no equal. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Simple, unfailing, very economical; has no adjustments. Spur planetary transmission (clutches included) running in oil.

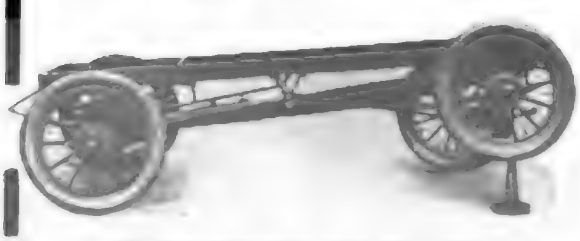
Four cylinder motor; perfectly air-cooled. Spark and throttle control on steering wheel.

The Marmon is stylish, strikingly handsome and very quiet. It is "A Mechanical Masterpiece" in whole and in every part, replete with distinctive features that appeal instantly and forcefully to all who seek a really superior car.

Full description in Booklet No. 1. Write for it.

NORDYKE & MARMON CO. Established 1851 **Indianapolis, Ind.**

Members American Motor Car Manufacturers' Association



Side View—Front Wheel Raised Over a Foot.

Rides Like a Sail Boat

Side View—Rear Wheel Raised Over a Foot.

SUPPOSE you bought a car last winter at the Show, received it about a month later than it was promised—paid about $2,000 for it; spent $500 more or less on tires and repairs, and now find that the maker is going to stop making this car, or is going to cut the price $500 for next year—your car is now worth about $1,200, isn't it? and your summer's fun has cost you $500 plus $800 (depreciation), which is $1,300—which for six months use is over $200 a month—pretty steep, when you figure it up this way, isn't it?

Suppose you had bought a Stevens-Duryea at $2,500, spent $25 for tires and repairs (for that's all they have averaged)—It is not taken off the market at the end of the year, it is not cut in price for next year—you don't have to trade it in at a sacrifice of 40 per cent—(about a thousand dollars) in order to have an up-to-date car for next year.

Which car would you consider a better bargain?

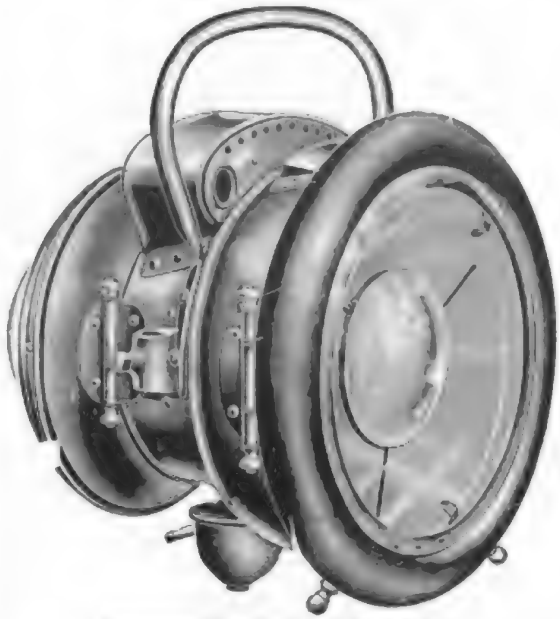
J. STEVENS ARMS & TOOL CO.

Makers of the Twentieth Century Hustler

705 MAIN STREET CHICOPEE FALLS, MASS.

Member Association Licensed Automobile Manufacturers

PHARE-LITE



Parobolens Headlight, List Price $15.00.

Without Frills or Fancy Words

THESE CLAIMS

We Make

The Phare-Lite is

The most durably constructed lamp ever made. Most simple of all lamps to operate. Throws most brilliant light and ejects its ray further than any lamp now on the market. Strikingly beautiful in appearance. *List Price* about *One Half the cost* of *Other Good Lamps.*

AND EACH CLAIM MADE

WE GUARANTEE

DEALERS who have their weather eye always on the MAIN CHANCE will probably lose no time in writing for the entire story.

Parobolens Bullet, List Price, $18.00.

EXCELSIOR SUPPLY CO.

233-235-237 RANDOLPH ST., CHICAGO, ILL.

Digitized by Google

WE HAVE COMMENCED DAILY DELIVERY OF

MITCHELL

CARS FOR 1906

Runabout

Model 2B, 2-cylinder, 8 horse-power, vertical motor, mounted in front . . $750

Touring Car

Model 4B 4-cylinder 18-20 horse-power $1500

OUR 1906 PRODUCT WILL ALSO INCLUDE A NEW LINE OF COMMERCIAL CARS AND TWO OTHER MODELS SOON TO BE ANNOUNCED

The racy lines and aristocratic appearance of the **Mitchell** has made it first among cars **"Once seen, long remembered."** Added to the value of favorable **"first impressions,"** dealers will find this line replete with good, sound common sense **"proving points,"** meaning **"talking points"** which can be **"proved."** All cars possess **"talking points,"** but it takes **"proving points"** to satisfy a wise buyer.

DON'T DELAY. WRITE TO-DAY

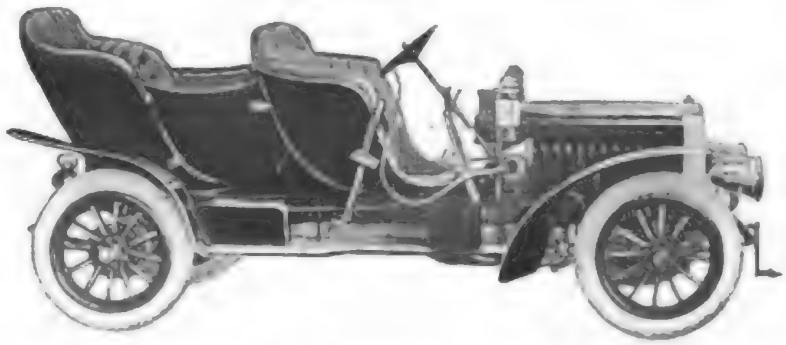
We cannot take care of a great many new dealers for 1906. But a few good ones. YES.

MITCHELL MOTOR CAR COMPANY, Racine, Wis.

Member Association Motor Car Manufacturers

Digitized by Google

The Queen



One of Our Three New Models

MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS — All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H. P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

Digitized by Google

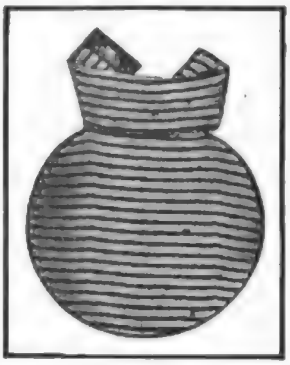
WAY'S MUFFLER

A Sure Guarantee Against Colds

Especially adapted for Fall and Winter Automobiling

A Perfect Throat and Chest Protector

For Men, Women and Children



EASY TO PUT ON AS YOUR HAT

Made with or without ear-tabs

¶ Way's Muffler is an Ideal Garment for Automobilists.

¶ Sold by dealers everywhere. If your dealer cannot supply you, write direct to

The WAY MUFFLER CO.

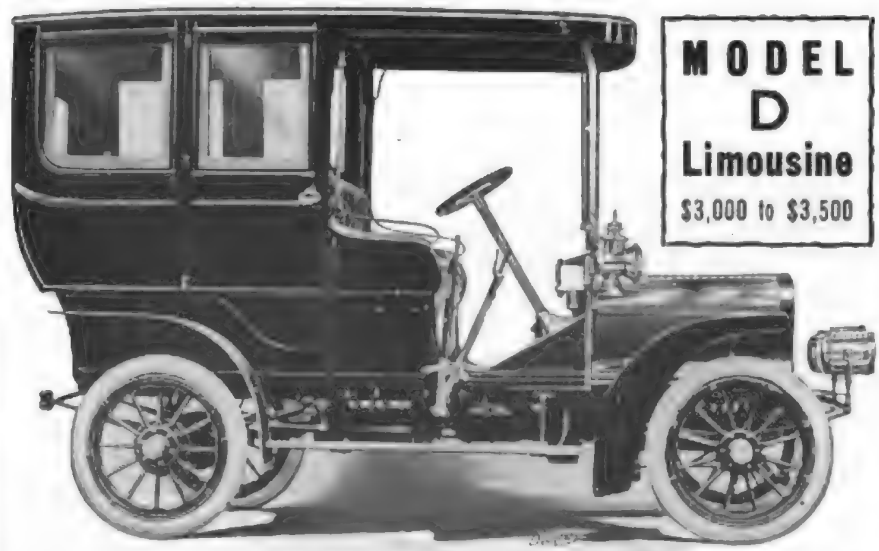
MANUFACTURERS

J. HOWARD WAY, Prop.

Cor. 23d and Arch Streets

PHILADELPHIA, PA.

Digitized by Google



MODEL D Limousine
$3,000 to $3,500

CORBIN
AIR-COOLED CARS

AIR-COOLING, highly desirable at all seasons, is especially advantageous when applied to cars for winter driving

SILENT AS THE PURRING OF A KITTEN

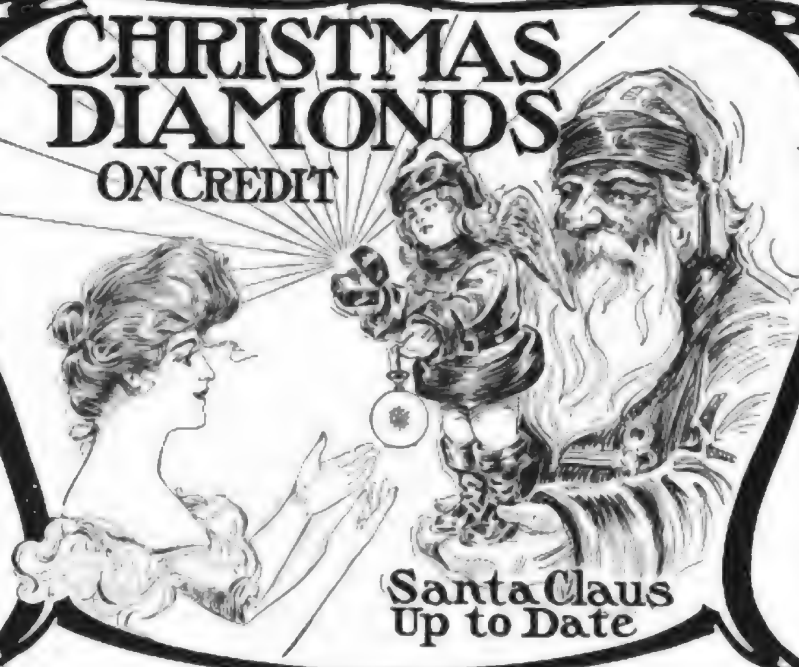
Our Catalogue tells the story of Air Cooling in particular and of Corbin Cars in general. Sent on request.

Corbin Motor Vehicle Corporation
NEW BRITAIN, CONN.

NEW YORK, 4 West Thirty-Eighth St.
BOSTON, 43 Columbus Avenue
PHILADELPHIA, 629 North Broad St.
CHICAGO, 1404-6 Michigan Avenue

Digitized by Google

CHRISTMAS DIAMONDS ON CREDIT



Santa Claus Up to Date

Love Is the Real Santa Claus

It is our love for our dear ones that makes Christmas a truly Happy Season, and that brings to one and all the joys of a Christmas remembrance.

The Loftis System at Christmas Time

Is a great and Timely Convenience to thousands, as it enables persons in all circumstances to make beautiful and appropriate Christmas Gifts. Everyone at Christmas Time is anxious to give their loved ones handsome Christmas Presents, but it is not always convenient. THE LOFTIS SYSTEM of Credit MEANS CONVENIENCE. That is the only way in which it differs from a cash transaction. There is no delay, no security, no publicity. It simply means a matter of confidence and convenience to honorable people. Write Today for Our Handsome Christmas Catalogue.

You Are Welcome to Credit Whether you are a moderate salaried employee or a wealthy employer. The Loftis System makes any honest person's credit good by adjusting terms to meet their earnings or income. Do not think that you must give a cheap, ordinary present because you can only spare a few Dollars just now. With five or ten Dollars for a first payment you can give a beautiful Diamond which will last forever, enhance in value and continually bring pleasant thoughts of the giver's generosity.

Our Handsome Christmas Catalogue is resplendent with thousands of beautiful Jewelry suggestions for Xmas Gifts. Diamond Rings, Pins, Brooches and Earrings, Chatelaine Watches, Silverware, etc., for Wife, Sweetheart, Sister or Mother. Sparkling Diamond Studs, Scarf Pins and Cuff Buttons, Watches, Match Safes, Fobs, etc., for Husband, Father or Brother. With its aid you can select, in the privacy of your own home, suitable Gifts for all, both old and young. May we not have the pleasure of sending you a copy?

True Merit Wins! In competition with the entire world (both the United States and foreign countries) at the St. Louis World's Fair, our Goods, Prices, Methods and Terms won the Gold Medal, the highest award. No stronger endorsement of THE LOFTIS SYSTEM could be given.

This, together with the fact that we are the largest and oldest established Jewelry House in the United States, and that we refer you to any bank anywhere or any commercial agency as to our reliability and standing should interest you in our liberal offer to send you our Handsome Christmas Catalogue and to extend to you our most liberal terms as an aid to you in making Christmas a truly Happy season. Write today for Catalogue.

Do Your Christmas Shopping Now. Let us suggest that you do your Christmas Shopping now, conveniently and leisurely in the privacy of your own home. Select from our Handsome Catalogue the articles you desire and we will send them to you for examination and approval. If satisfactory retain them, paying one-fifth the cost and the balance in eight equal monthly payments. If not, return to us. We take all risks and pay all express charges. Now is the time to secure the choice selections and have ample time to inspect the goods. All orders filled promptly. Write Today for Our Christmas Catalogue.

There is no better investment than a Diamond. They have increased in value more than twenty per cent during the past twelve months and Diamond experts predict an even greater increase during the coming year. Write today for Our Christmas Catalogue.

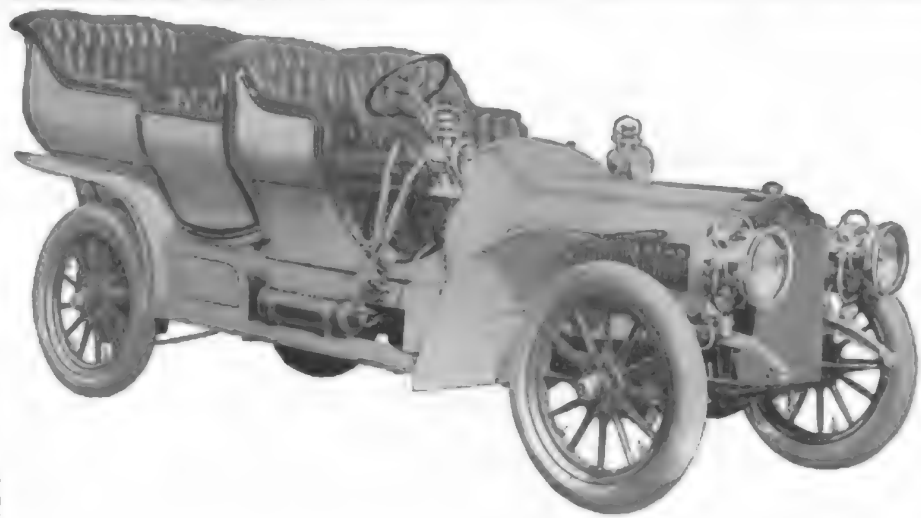
LOFTIS BROS & CO. ESTD 1858

DIAMOND CUTTERS
Watchmakers, Jewelers
Dept. M560 92 State Street
CHICAGO, ILLINOIS, U. S. A.

Digitized by Google

The New Thomas

Greatly Exceeds My Most Sanguine Expectations Experts Say It Is a Wonder



NO customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level, and climbs a 10 per cent grade on the high speed at forty miles per hour, within an hour after it first leaves the shops, it is something that not one car in a thousand will do.

Under favorable conditions we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill-climbing, quiet operations and mechanical superiority, and cordially urge disinterested automobile experts everywhere to rigidly investigate our claims, and compare our material, workmanship and design with the highest-priced cars in the world—we will win the verdict.

E. R. THOMAS.

For the E. R. THOMAS MOTOR CO., Buffalo, N. Y.

E. R. THOMAS MOTOR COMPANY

1417 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google

National

MAKES WORLD'S RECORD

at Indianapolis, Nov. 4, 1905

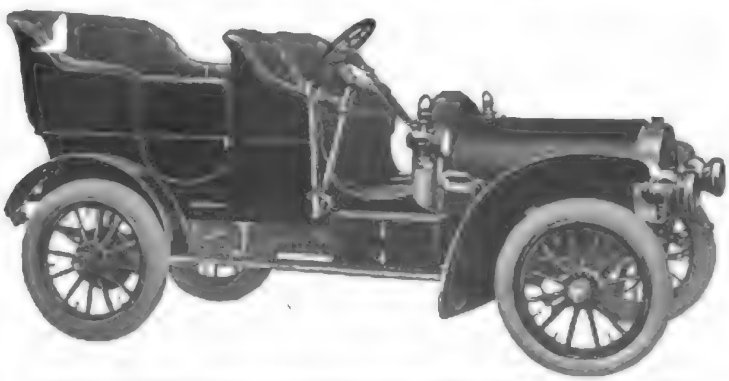
The National '06 Model won the 100-mile track race.

Jap Clemens in 1906 NATIONAL--stripped stock car which broke world's record.

100 MILES IN THE WORLD'S RECORD TIME OF

1 HOUR; 53 MIN; 21⅘ SEC.

EVERY MILE AT AN AVERAGE OF 1 MIN; 08 SEC.



National Model D--One of the same kind with roomy, luxurious body.

thus establishing a new world's record for stripped

STOCK CARS

Two Nationals started in this race and for 83 miles made a wonderful demonstration of the UNIFORM RELIABILITY of National Cars, both cars running a nip and tuck race, at all times within 50 feet of each other, until one car was called off by the referee because of an unsafe tire.

Write for details.

"Watch for the Round Radiator"

National Motor Vehicle Co.

1006 E. 22d St., Indianapolis, Ind.

MEMBER AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

Digitized by Google

SEND FOR THIS BOOKLET

of Peerless 1906 Information, if you intend to buy a 1906 car—or if you are interested in automobiles—for it contains one of the most complete mechanical descriptions of an automobile ever printed. It not only tells just what are the famous Peerless mechanical principles, but it also explains why we have found them best.

A postal will bring it—Send today

THE PEERLESS MOTOR CAR CO.

802 Quincy Street, Cleveland, Ohio

Member A. L. A. M.

Digitized by Google

Motor Age Circulation

Here is a testimonial from a firm which systematically checks all returns from advertising—one of the most convincing and valuable testimonials a publication ever received—read it

ROBERT INSTRUMENT CO., 56 Shelby Street.

MOTOR AGE, Chicago, Ill. Detroit, Mich., Nov. 2, 1905.

Gentlemen: Of all the publications relating to automobiling (and you will agree with us there are a few), we have shifted them thoroughly and from the entire "bunch" but four remain.

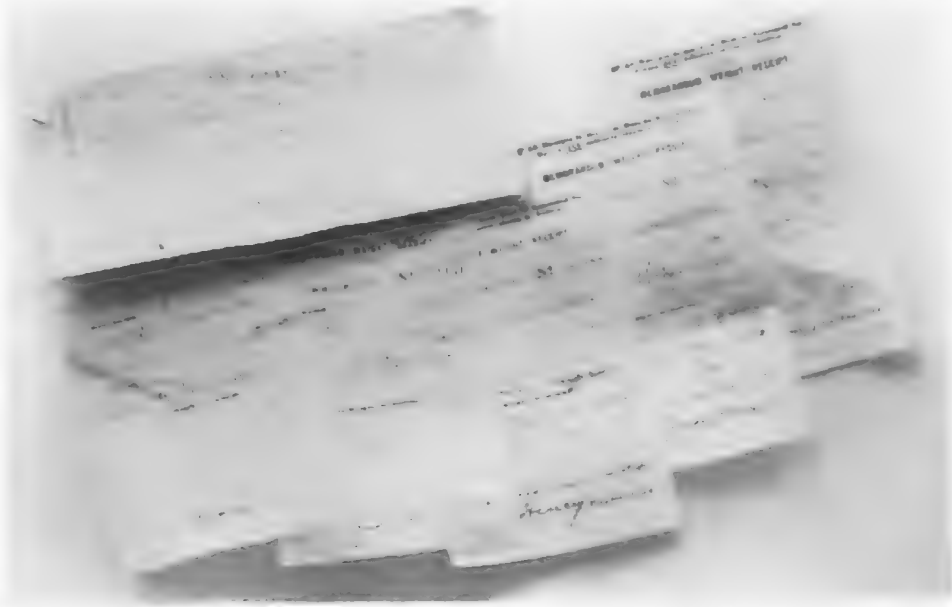
Of these four we have divided into two parts, "east" and "west." MOTOR AGE is west and the other three east.

The writer has practically "traced" every inquiry and order. The following form is made out weekly, and more often MOTOR AGE is first in amount of inquiries, orders and quantity.

The following is a copy of the last week, in which MOTOR AGE is again first:

	Inquiries.	Orders.	Quantity.		Inquiries.	Orders.	Quantity.
MOTOR AGE	24	15	32	HORSELESS AGE	12	9	14
CYCLE AND AUTO	16	11	21	AUTOMOBILE	9	8	19

Yours very truly, (Signed) ROBERT INSTRUMENT CO.
H. A. Abrahamson.



The above cut represents Post Office Receipts for 6,399 pounds net, of issue of October 26, 1905.

Each paper, including wrapper, weighed an average of 9½ ounces.		
6,399 pounds divided by 9½ ounces equals	10,777	papers
We also sold, non-returnable, to Western News Co. and news stands direct	674	"
Mailed under stamps to foreign addresses	90	"
Retained for office sales and distribution	350	"
Sold to Knight & Kelbourne for private circulation	600	"
Total for week of October 26	12,491	"
October 19, page 50, statement for October 5	12,239	papers
October 26, page 44, statement for October 12	12,868	"
November 2, page 48, statement for October 19	12,522	"
Statement above, for October 26	12,491	"
Average weekly edition for October issues, 12,530.	50,120	"

STATEMENTS PREVIOUSLY PUBLISHED

July—Average weekly circulation	11,755	Total	47,020
August—Average weekly circulation	12,468	"	62,393
September—Average weekly circulation	12,535	"	50,141
October—Average weekly circulation	12,530	"	50,120
Average for 4 months, 17 issues	12,334	"	209,674

We have in preparation a pamphlet containing proof of all statements previously published, with other information regarding circulation, together with copies of a few testimonials received by MOTOR AGE from advertisers and subscribers, which will be ready in the near future.

Having firmly established the fact that MOTOR AGE leads from the standpoint of circulation, we shall now cease the publication of these statements among our advertising pages, and render reports direct to interested parties each month.

We guarantee a Circulation of 12,000 Weekly

MOTOR AGE, *N. H. VanSicklen* Manager

Digitized by Google

CADILLAC SALABILITY

Here's the 1905 Sales Record of one of the principal cities of the Central States
(POPULATION ABOUT 300,000)

	No. Lines Handled	Total Cars Sold
Dealer No. 1	Two	12
Dealer No. 2	Two	11
Dealer No. 3	Four	4
Dealer No. 4	Four	1
Dealer No. 5	Two	2
Dealer No. 6	One	6
Dealer No. 7	One	0
Dealer No. 8	One	4
Dealer No. 9	Two	0
Dealer No. 10	One	2
Dealer No. 11	Two	1

Total sales by above dealers 43 cars

THE CADILLAC DEALER SOLD 51 CADILLACS

Or about 15 per cent more Cadillacs than the sales of all the other dealers combined

There's a Reason For This and It's Not Hard to Guess It

We're Talking 1906 Business

CADILLAC MOTOR CAR CO., *Member Association Licensed Automobile Manufacturers.* **DETROIT, MICH.**

Will you write us about the

1906 Agency for the Wayne?

The Wayne Agency for 1906 is a good thing. The Wayne Cars were extensively advertised last year in all the leading magazines and trade papers. For 1906 we have made arrangements for a campaign of cooperation with our local agents which will mean practical assistance in selling Wayne Cars. We realize that to get good agents it is necessary for the agent to have a proposition on which he can make money, and the Wayne agency proposition is one which it will pay you to investigate.

The Wayne line for 1906 is comprised of cars that have proved their ability to stand hard usage by three years' road service.

We have not changed the Wayne principle of construction because nobody has yet been able to show us anything better tho' our cars contain all new improvements and are strictly up-to-date (no old models built over).

WRITE US AND FIND OUT WHAT WE HAVE TO OFFER, BEFORE YOU FORGET

WAYNE AUTOMOBILE CO. - Detroit, Mich.

Digitized by Google

THE HARTFORD DUNLOP TIRE

OFFICE OF
DR. J. B. BOUCHER.
80 CHESTER CAR AVE.,
TELEPHONE CALL 1000.

Hartford, Conn., Oct. 23, 1906.

The Hartford Rubber Works Company,

Hartford, Conn.

Gentlemen:-

You may be interested to learn that the Hartford Dunlop tires fitted to my two cylinder Knox which I have driven all season, have thus far covered a little over 3500 miles. I have had no trouble with the exception of four punctures. I am much pleased with the tires both as to their wearing qualities and the ease with which they can be removed and replaced.

I do not enjoy punctures but must admit that they are robbed of half their horror since using the Dunlop.

Very respectfully yours,

J. B. Boucher M. D.

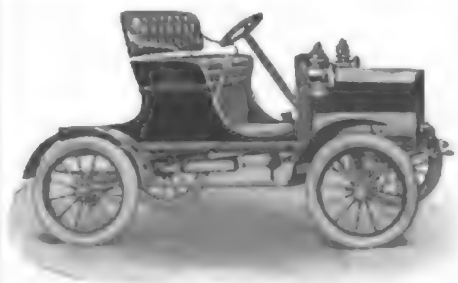
THE
Hartford Rubber Works Company

Home Office and Factories Nos. 1 and 2,
HARTFORD, CONN.
Factory No. 3, New Brunswick, N. J.

BRANCHES:
BOSTON, 492 Atlantic Ave.
NEW YORK, 88 Chambers St.
NEW YORK, 1780 Broadway.
NEW YORK, 2356 Jerome Ave.
PHILADELPHIA, 128 N. Tenth St.
BUFFALO, 696 Main St.
SAN FRANCISCO, 461 Mission St.
CLEVELAND, 77 Bank St.
DETROIT, 266 Jefferson Ave.
CHICAGO, 83 Michigan Ave.
DENVER, 1564 Broadway.
LOS ANGELES, 116 East Ninth St.

Just a Few Details

of our Models G and H which we could not mention in our announcement in Motor Age October 19 and 26: First a word about 2 cycle motors. In this construction all valves, cams, cam shafts and all gearings are entirely omitted as compared with 4 cycle motors. 75 per cent less working parts, 75 per cent **less** trouble. Our motor is as quiet as is possible to make a gasoline car. Both models, G and H, have 2 cycle, 2 cylinder vertical motors under hood in front. Beautiful body design, materials all of the very best, planetary transmission. **One lever controls all speeds and brake.** Model G lists at $650, Model H lists at $750.



Model "G" 10 h.p. Runabout

NOTICE

We Want Agents in Every Locality

Agents who will hustle. Our line a quick seller and will remain sold. Fewer parts, fewer repairs, fully equipped.

ADDRESS
DEPT. "C"

Model "H" 10 h.p. Delivery.

Wolverine Automobile & Commercial Vehicle Co.

DUNDEE ... ... MICHIGAN

Digitized by Google

POPE Hartford AUTOMOBILES

Nothing Approaching it in Quality for the Price

Our 1906 New Pope-Hartford Model F

Will give you style, elegance and comfort, and it cannot be excelled at anywhere near the price for quietness, speed and hill-climbing qualities.

MOTOR: A four-cylinder, vertical, water-cooled engine with cylinders cast in pairs, all gears encased, developing under break test 28-30 H. P.

TRANSMISSION: Of the sliding gear type, three speeds forward and reverse.

BEVEL GEAR DRIVE: Through a propeller shaft to the rear axle.

THE BODY: Is of new and graceful design, comfortably seats five people, non-removable dust-proof tonneau.

Pope-Hartford Model D

A two-cylinder opposed, 18 H. P. touring car, wieldy and reliable. The machine that did the 1,000 miles of the Glidden Tour with only a ten cent repair. Price, $1,600.

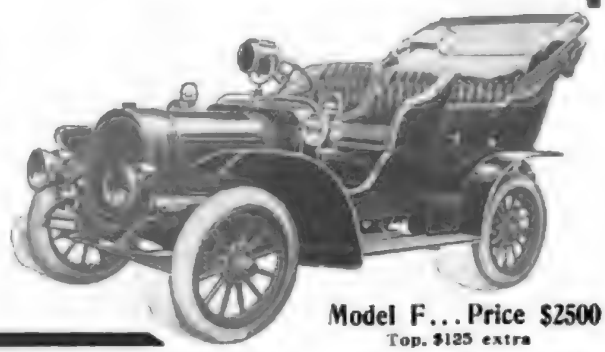
Catalogue will be mailed on request.

Pope Manufacturing Company

HARTFORD, CONN.

New York City: 1733 Broadway
Boston, Mass.: 223 Columbus Ave.
Washington, D. C., 819 14th St.
San Francisco, Cal., 451 Mission St.

A. L. A. M.



Model F... Price $2500
Top, $125 extra

Change Tires—Thirty Seconds

Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an *ordinary* rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher, my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it *isn't* an all-day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire, ANY kind, is on. You need no tools but the hands. And are "fixed up" and on the road while the man with *ordinary* rims is hunting for his crowbars and levers.

Figure 1

You see the flange comes right off on Goodyear Universal Rims like Fig. 1.

And then a 36-inch tire (for example) slides right on to the 26-inch rim like Fig. 2, as easy as you would put on your hat. On an ordinary rim you would have to pry that 26-inch tire over a 27-inch flange. You know what a profanity-inspiring job that is and it doesn't do the tire any good either.

Figure 2

Now this is all there is to taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

The rim is made up of four parts, like Fig. 3.

Figure 3.

Nos. 1 and 3 are the removable flanges (rings) which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for standard clincher rims.

No. 4 is the binding ring which holds the flanges in place.

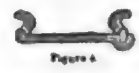


Figure 4

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim when put together, would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.

Figure 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.

It can't be removed (and, of course, the tire can't come off) while the flange presses against it. This flange is kept tight against the ring by a plate which slips over the valve stem like Fig. 7.

Figure 6

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward like Fig. 8.

Then lift out the binding-ring, slip off the flange, and pull off the tire.

Time, 15 seconds. No tools but the hands.

Figure 7.

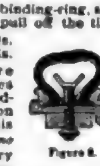


Figure 8.

Those who are weary of tire troubles are specifying Goodyear Auto Tires on Universal Rims. This equipment *costs no more* than the ordinary kind, and multiplies the pleasures of motoring many times.

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but *the best*.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace St., Akron, Ohio

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1218 N. Broadway; Cleveland, 60 Frankfort St.; Philadelphia, 1421 Spring St.; Denver, 230 Sixteenth St., and Detroit, 242 Jefferson Ave.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

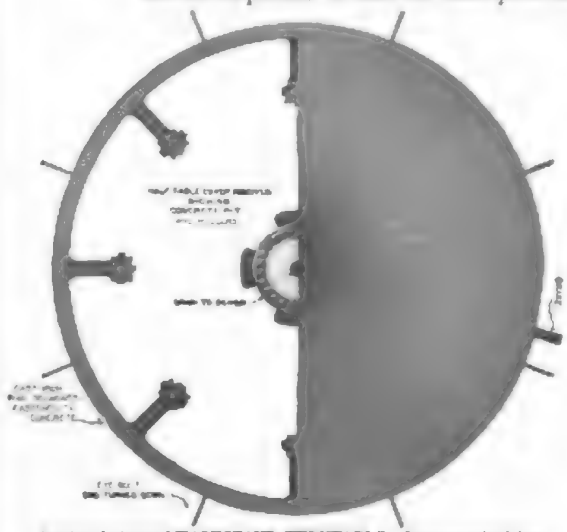
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

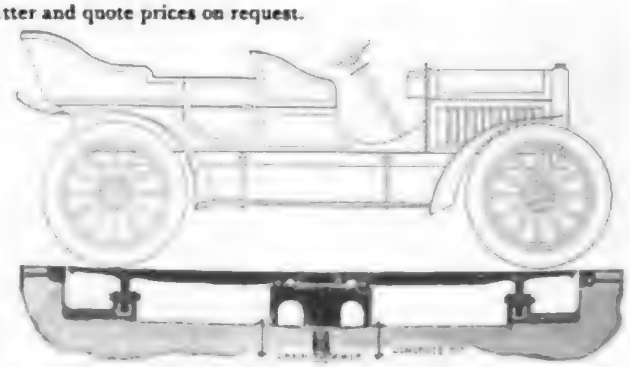
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT
Machinery Co.
CHICAGO

KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

CONTINENTAL TIRES

"THE WORLD'S BEST"

First Chauffeur—There's one thing I hate to run over, and that's a baby.

Second Chauffeur—So do I; them nursing bottles raise Cain with tires!—"Puck."

BRANCHES

BOSTON, MASS.,	735 Boylston Street
BUFFALO, N. Y.,	729 Main Street
CLEVELAND, O.	325 Huron St.
DETROIT, MICH.	260 Jefferson Ave.

CONTINENTAL TIRES are not recommended for running over nursing bottles.

The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen'l Manager

43 Warren St. - NEW YORK

FACTORY, HANOVER, GERMANY

But for thousands of miles of rough road use they are JUST WHAT YOU WANT

AGENCIES

Chicago, Ill., Excelsior Supply Co., 237 E. Randolph St.
New York City, Motor Car Equipment Co., 55 Warren St.
Philadelphia, Pa., Jas. L. Gibney & Bro., 211 N. Broad St.
San Francisco, Cal., Pacific Continental Tire Agency, Golden Gate Avenue and Gough St.
St. Louis, Mo., Continental Tire Agency, 3908 Olive St.

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.

TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in Principal Cities.

New York Agents: MAXWELL-BRISCO, INC.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Digitized by Google

"Firestone"
Side-Wire Tires
are used on nine-tenths of all the commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by *hard experience* that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.
Firestone Tires wear like iron. They hold their shape—they give satisfaction.
Then Why Not "Firestone?"
Firestone Tire and Rubber Co., Akron, Ohio
New York Chicago Philadelphia Boston St. Louis
San Francisco Los Angeles

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

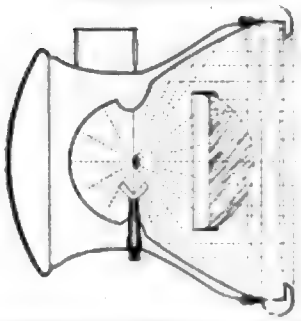
24 h. p. Berg Touring Car

IMMEDIATE DELIVERY MEMBERS A.L.A.M.

Digitized by Google

THE RE-INVENTION OF A RELIC

The Ancient



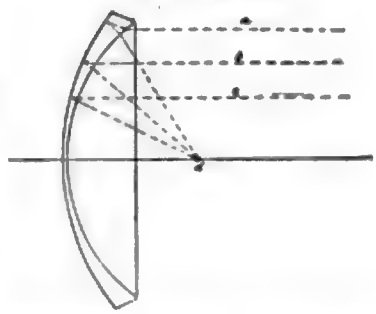
Abandoned by Rushmore ten years ago, patent expired.

FAILING IN THEIR EFFORTS TO IMITATE THE MODERN RUSHMORE SEARCHLIGHT, THE LANTERN MAKERS NOW TAKE UP THE ANCIENT DESIGN THAT RUSHMORE ABANDONED BEFORE AUTOMOBILES WERE KNOWN.

The best proof that the Rushmore Lens Mirror Searchlight has driven the lantern makers to the wall is the fact that they are now trying to create a demand for the old style metal reflector light fitted with a spherical cup and a little bull's-eye lens.

This "parabola-lens" reflector was patented and was manufactured by S. W. Rushmore over seventeen years ago. The patent has expired. Over a thousand large "parabola-lens" marine searchlights were sold by us, but we abandoned the design ten years ago when we perfected the aplanatic lens mirror, which is now the standard in all the navies of the world.

The Modern



Aplanatic Mirror, perfected by Rushmore ten years ago, now standard of the world.

We guarantee the 8-inch Rushmore searchlight with a three-eighths foot burner to give more light than the big twelve-inch "parabola-lens" light with its big three-quarter foot burner. It is an eight to one proposition. The Modern against the Ancient.

A brand new reflector shows up pretty well on the first night it is lighted, but after that the silver plating blackens and no amount of scrubbing can improve it.

The drowning man grasps at straws. The drowning lantern maker makes a last effort to float himself on the time honored and abandoned metal reflector.

RUSHMORE DYNAMO WORKS, Plainfield, N. J.

Michelin

Tires of the highest class.

Copied but never equaled.

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET
NEW YORK

E. D. WINANS, Gen'l Mgr.

Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

Digitized by Google

Compound MOTOR CARS

1906 **MODELS Now Ready for Demonstration**

All Valves Interchangeable.

Positive Lubrication by Mechanical Force Feed Oiler.

Hand Forged Crank Shaft ground to size.

12-15 H. P. Compound Motor.

Aluminum Body.

Sliding Gear Transmission, Three Speeds Forward and Reverse.

Can be furnished with either Shaft or Double Chain Drive.

EQUIPPED WITH TOP AND HEADLIGHTS, $1550

We should be pleased to refer anyone to many satisfied customers who are daily using Compounds
Testimonials will appear from time to time in future advertisements

THE E. H. V. CO. : : Middletown, Conn.

Pantasote
LEATHER

Gives leather effects, and rich, handsome finish to car. Absolutely water, grease and stain proof—can be kept clean with water and a sponge. Lasting and will never lose color—non-fading. From a durability standpoint it is the most economical material for all automobile and mackintosh uses.

PANTASOTE is proof against all climatic conditions
Send for samples of the new and complete 1906 line

The Pantasote Company

11 Broadway
NEW YORK

926 Monadnock Bldg.
CHICAGO

Stanhope

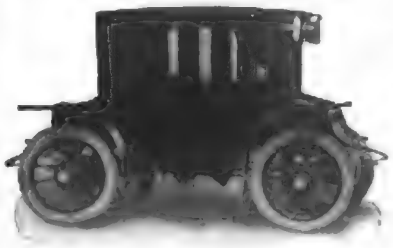
Baker Electrics

Depot Wagon

embody every possible good feature required to make them what they are so frequently called—

The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



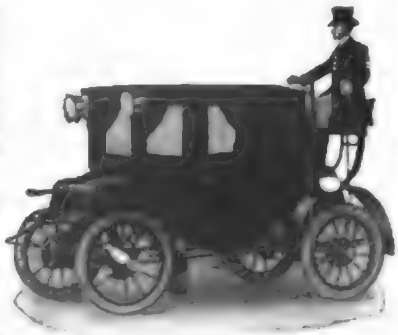
Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.

IMPERIALS, STANHOPES, SURREYS
DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co.

24 Jessie Street :: CLEVELAND, OHIO



Outside-Driven Brougham

PENNSYLVANIA CLINCHER

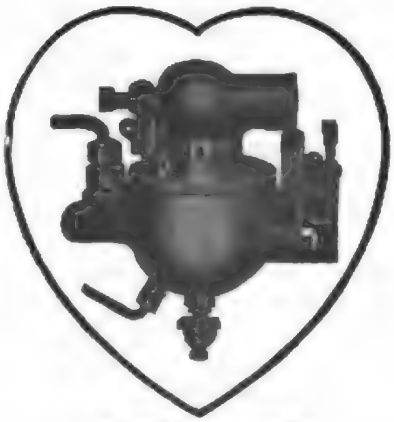
There are no perfect Motor Cars, nor any perfect tires—as yet;

But if you have a car which you consider almost perfect, perhaps you would like a tire fit to associate with it.

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ½" to 3".

Schebler carbureter with balance throttle to be used with a governor.

Schebler two-cycle engine carbureters.

Schebler Special for Cadillacs.

Oldsmobile carbureters.

Ford two-cylinder carbureters.

Autocar Runabout carbureters.

Franklin Automobile carbureters.

Standard sizes for all other motors.

Special fittings for attaching the Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

LIST OF AGENCIES.

P. J. Dasey.....431 Wabash Ave., Chicago, Ill. Factory Rep.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, Rhode Island
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Elec. Supply Co.....Washington, D. C.
Automobile Equipment Co.....Detroit, Mich.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station....3425 N. Broad St., Phila., Pa.
Auto Supply Agency.....3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co.....New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chandler & Lyon Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Nell & Co.....88 Fenchurch St., London, England.

Congratulations

From a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, *the latter seems to be a sure thing on some tires that we know of.*

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—*Ashville Cycle and Auto Company, Sept. 23, 1905.*

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1625 Broadway
Buffalo, 731 Main St. — Cleveland, 420 Superior St.
San Francisco, 392 Mission St. — Chicago, 141 Lake St.
Boston, 161 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

Digitized by Google

A RECORD OF RECORDS

WE entered the Vanderbilt Cup Elimination Race for **only one** purpose.

We wanted to demonstrate that a **HAYNES Touring** Car could—**and would**—do in competition with racing monsters.

WE had been making what some people called extravagant claims for the **HAYNES**—and we wanted to prove them.

They **are** proven.

The **HAYNES** finished as neat a race as was ever witnessed and **won a place** entitling it to representation on the American Team.

The **HAYNES** will be **the** selling car of next season.

This record is conclusive evidence to the intending purchaser.

We want a few **good** agents.
Write **quick** for particulars.

Orders for this car are booked in the order of their receipt.

THE HAYNES Automobile Company

Members A. L. A. M.

Kokomo, Indiana

Chicago New York

The Incomparable

WHITE

The Car for Service

ANNOUNCING BULLETIN No. 11

The most notable victory of the year scored by a stock car was the record trip of George A. Hensley in a White steamer from San Francisco to Los Angeles—a distance of 470 miles—in 21 hours and 12 minutes. This record superseded that of a 30 h. p. machine which had previously negotiated the distance in 24 hours and 56 minutes.

Three months have elapsed since Mr. Hensley's record drive and his record is still unapproached.

FURTHER DETAILS IN BULLETIN No. 11

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

REASON FOR RECORDS

G & J

TIRES

On Saturday, Nov. 4, at the Indianapolis Fair Ground race track, Jap Clemens drove a regulation stock

NATIONAL

car, equipped with

G & J TIRES

100 MILES

in the World's Record Time

1:53:21 4/5

From start to finish not one moment was lost on account of tire trouble of any nature

NO TIME IS EVER LOST BY USERS OF G & J TIRES

Every Event at the Indianapolis Meet was won on G & J Tires

Get our new Tire Manual, free on request.

G & J Tire Co.
INDIANAPOLIS

Chicago Boston Buffa'o San Francisco
Detroit Cleveland Denver

A RANGY LINE

1906

JACKSONS

THREE MODELS
"C," "D" AND "G"

RANGE OF PRICES
$1250, $1500, $2500

RANGE OF POWER
FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE
90" ═══ 100" ═══ 108"

Plenty of Style, Strength and Speed

MODEL C
2 cylinders opposed, 5¼"x5", motor under body, wheel base, 90 inches; chain drive.
Price, $1250

MODEL D
A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.
Price, $1500

MODEL G
40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.
Price, $2500

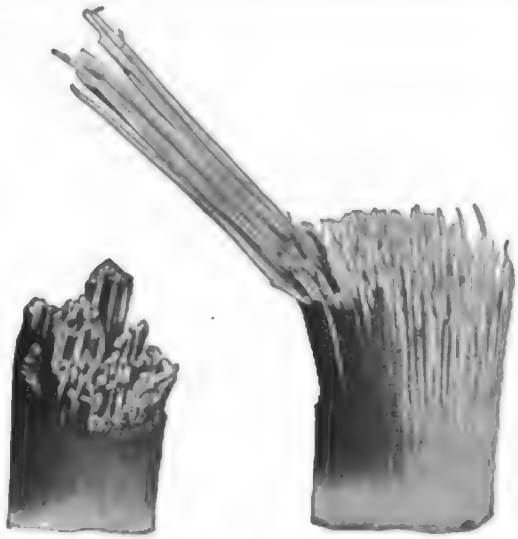
LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

A Live Line For Live Dealers : : : : : : WRITE

JACKSON AUTOMOBILE CO.
JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

Digitized by Google



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 6

A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.

When you see an unpainted Imperial wheel examine it closely and you will be impressed not only with the fine quality of its hickory, but with the strength of the spoke arch construction and the careful attention which has been given to every minor detail of the general fitting of the wheel, as, for example, the unusual insurance afforded against accidental splitting of the felloe.

Our success in wheel making is based upon the high development and application of the fundamental principles of the art—not upon geometrical novelties.

The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

IMPERIAL WHEEL COMPANY

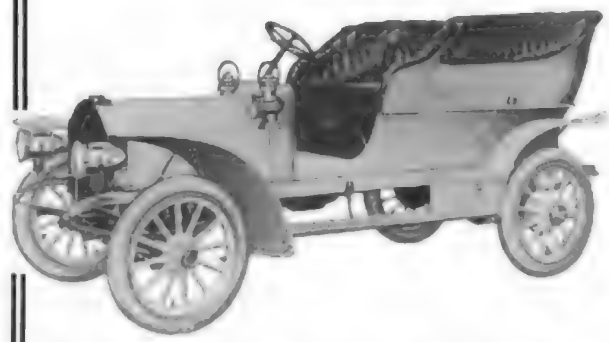
FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

KNOWLEDGE IS GOLDEN

1906 Stoddard-Dayton

Model D



The material concerns from whom we order **KNOW** we buy only the best of everything throughout.

WE make the car from stem to stern and consequently **KNOW** that no car in the world can be better built.

Dealers who sell the STODDARD-DAYTON **KNOW** their only trouble lies in getting enough cars.

People who have bought Stoddard-Daytons in the past **KNOW** that THEY are satisfied in each and every particular

¶ There only remains to be said, that the 1906 Stoddard-Dayton is better this year than it was last.

¶ What more can anybody want?

¶ Booklet ready. ... Catalogue later.

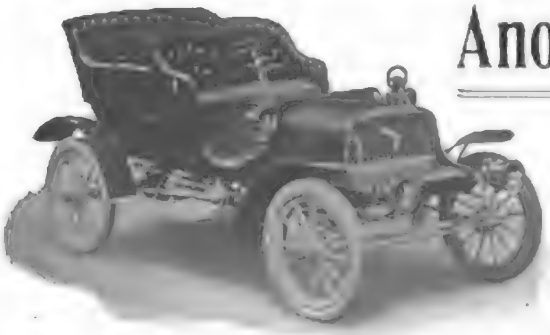
CHICAGO: McDuffee Auto Co.
NEW YORK: Stoddard-Dayton Agency, 60th and Broadway
BOSTON: Randliff Motor Co.
MINNEAPOLIS: Haynes Auto Co.
INDIANAPOLIS: Frank L. Moore.

Dayton Motor Car Co.

FACTORIES

Dayton ... Ohio

Digitized by Google



Another PREMIER Triumph

At the races held at Indianapolis Saturday, Nov. 4th, the PREMIER 16 H. P. *regular stock car* set a new mark for cars of its power, making 100 miles in 135 minutes without stopping, thus breaking all records in its class. In making this run *less than four gallons of gasoline* were consumed, and the last 20 miles were the fastest of the hundred. There was a variation of only 5 seconds between the fastest and slowest miles.

This same car, without a particle of adjustment, participated in five races immediately succeeding this performance, winning three firsts, one second and one third against cars all of which were *much* higher powered and priced.

These performances demonstrate initial and continued good performance, speed, reliability and economy. No better evidence of superior merit can be adduced.

The Premier line for 1906, with its additions, offers highly attractive features. We would be glad to tell you about it if you will communicate with us.

PREMIER MOTOR MFG CO., 1001 Georgia St., Indianapolis, Ind.

Members American Motor Car Manufacturers' Ass'n.

ANNOUNCEMENT
TO THE TRADE

Catalogue, Illustrating Many New Types, now in press. Send us your name for our mailing list

Commencing Nov. 4th the Long-Turney Mfg. Co. of Rome, N. Y., began the manufacture of

LONG SPIRAL TUBING RADIATORS AND HOODS

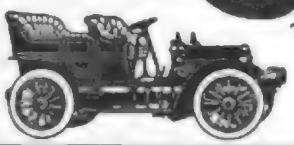
Heretofore these goods had been marketed EXCLUSIVELY by the Long Mfg. Co. of Chicago, but the unprecedented demand rendered it imperitive that a plant be established in the East to aid in the handling of Eastern and Export Trade. The new company, which is under the management of Mr. George W. Turney (for the past 14 years with the Rome Brass & Copper Co.) has been licensed to use all patents, and patents pending, of the Long Mfg. Co. on Spiral Tubing, Radiators and Hoods.

LONG MFG. CO.,
Chicago, Ill.

LONG-TURNEY MFG. CO. ROME N. Y.

Digitized by Google

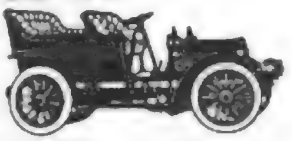
Locomobile



The Locomobile Company of America, Bridgeport, Conn.

Member Association Licensed Automobile Manufacturers.

NEW YORK, Broadway and 76th St.
PHILADELPHIA, 249 N. Broad St.
BOSTON, 15 Berkeley St
CHICAGO, 1354 Michigan Ave.



THEY MAKE ANY GOOD LAMP THROW THIS KIND OF LIGHT

Equip your cars with the

PREST-O-LITE GAS TANK

No Waste
No Odor
No Attention

Tips Never Clog
Nothing to Freeze

Burns as Many Lamps as Desired from One Tank

WHEN YOU WANT GAS, turn it on—WHEN YOU DON'T, turn it off. Tank will hold gas for months without loss. Every motor car owner or driver should write for our book of proof.

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.

AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL.

GAS-AU-LEC

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World

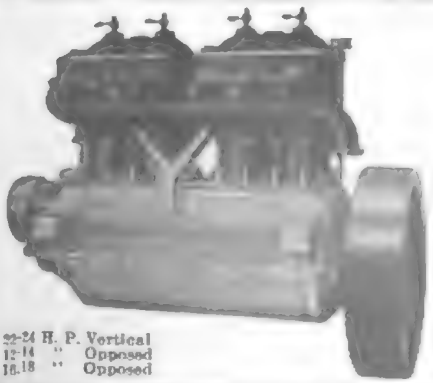
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

"THE SIMPLE CAR"



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

Self-starting from the Seat

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in..... WILKES-BARRÉ, PA.
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

A TIMELY WORD TO
DEALERS

THE Model A GALE $500

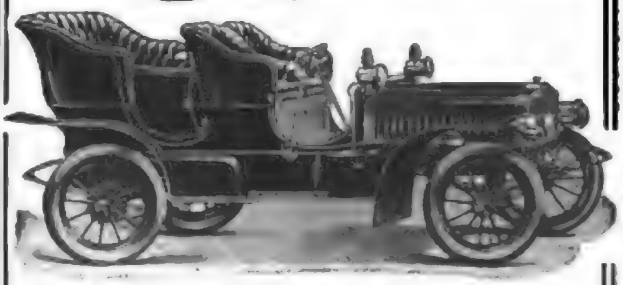
Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.

THE LAMBERT



Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.
ANDERSON, IND.
MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION CHICAGO

TRAPPIST MONKS

take a ride in the Adams-Farwell Car owned by Mr. Fred. C. Robinson, Grand Secretary of the Elks.

On July 30 the accompanying picture was taken during an outing at "The Monastery," thirteen miles west of Dubuque.

3 and 5 cylinder revolving motors :: 20-25 horsepower :: 40-45 horsepower

NO WATER NO RADIATOR NO FAN
NO FLY-WHEEL NO MUFFLER

Six Models *Send for Catalogue*

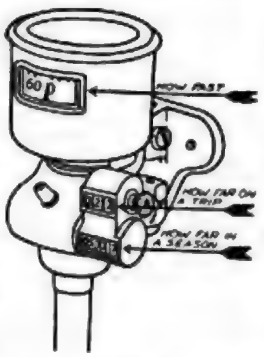
The Adams Company DUBUQUE, IOWA U. S. A.

Chicago Salesroom: 1336 Michigan Avenue

THE AUTO-METER "BUILT LIKE A CHRONOMETER"

TELLS THE SPEED OF TRAVEL TELLS THE DISTANCE TRAVELED

Tells both with absolute accuracy



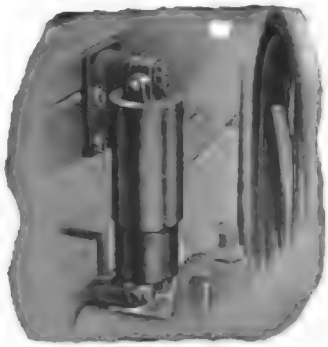
The **Speed Dial**, six inches wide and easily read, records the speed of a car from a fraction of a mile to sixty miles an hour and does it unerringly.
The **Trip Dial** records the distance traveled on a trip or for a day.
The **Season Dial** records the total distance covered in a season.
There is satisfaction in knowing how fast your car is traveling, satisfaction in knowing how far it has traveled. You enjoy this double satisfaction with an Auto-Meter on your car. Some one of your friends surely has one. Ask him about it.

In the meanwhile let us send you a catalogue and interesting pamphlet, "Indisputable Evidence."

WARNER INSTRUMENT CO. **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1091 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

Ride on Air



PATENT ALLOWED.

KILGORE Automobile Air Cushion "Shock Eliminator"

On Good Roads

They allow you to use and enjoy the full elasticity of **Easy Flexible Springs. Observe** we say "full elasticity."

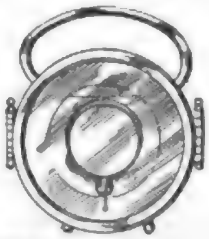
On Bad, Dangerous Roads

They control the too violent spring play, **BOTH UP AND DOWN. Observe** we say "both up and down." They transfer the load and strain from the springs to the axles. They prevent spring distortion and breakage. They lessen the wear and tear on tires.

There Are No Adjustments

This should interest you because: It adds to your comfort and safety. It effects a direct saving on "up-keep."
Write for full particulars.

Kilgore Automobile Air Cushion Company
50 Columbus Avenue, BOSTON, MASS.



The absolute best in Motor Lamps

THIS SOLAR PARABOLENS HEADLIGHT

throws most powerful beam of any lamp made, yet burns cool. Simple, safe and sure, no better lamp, can be built. The most your dealer will say about the next best is that it is "just as good as a SOLAR"—but why not buy the *standard* and dodge the second best?

We stand back of every SOLAR lamp with a guarantee to *you*—a warranty that leaves no room for risk on the buyer's part. You can't buy better lamps—whether oil or acetylene.

Write for booklet—or ask your supply man.

BADGER BRASS MFG. CO.
KENOSHA, WIS.
New York Office. 11 Warren St.

HAVE YOU SEEN THE NEW **KOKOMO** MECHANICALLY - ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

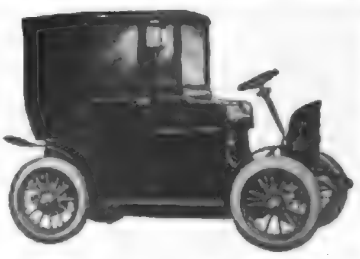
Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham-Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

My Troubles Are Over

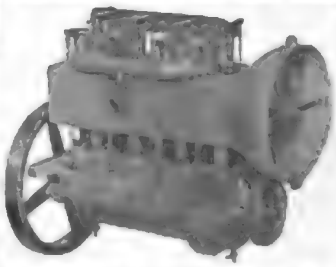
No more acid eaten clothing, foot mats, connections and cars.

The saving in this expense reduces the cost of the "Geecee" Battery by half over that of a liquid Storage Battery.

Scientifically designed and constructed throughout.

Royal Battery Co.
NEW YORK
a onal Sales Corporation
Factory Sales Manag
Broadway, New York

WE HAVE IT



Absolutely Tested
by all kinds of Herculean Work

Positively Proved
by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on outer end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT
AIR COOLED VERTICAL MOTOR

THE DETAILS

15 H. P., developed at 1500 revolutions
Bore and stroke, 3½-6 inches
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¼ inches.
Bearing on Connecting Rods, 2x1⅜ inches
Bearing on Wrist Pin, 1¾x1¾ inches
Connecting Rods of drop forgings with phosphor bronze Crank Shaft

Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 19½ inches
Center of Crank Shaft to bottom of Motor, 6½ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

180 WEST MAIN STREET, ROCHESTER, N. Y.

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE
With All Goods Bearing This
TRADE MARK

TRADE KOKUK MARK
REGISTERED

MANUFACTURED EXCLUSIVELY BY
F. S. CARR
74 Pearl Street, BOSTON, MASS.

Digitized by Google

The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

WANTED

Manufacturing concern having recently purchased large commercial motor vehicle works, is preparing to extend operations on a greatly enlarged scale for 1906, and wants

CAPABLE REPRESENTATIVES FOR EASTERN TERRITORY

OFFICE MANAGER
(Must be proficient in double entry book-keeping)

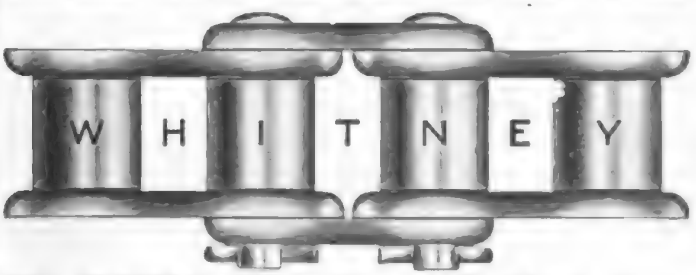
EXPERIENCED CORRESPONDENCE MAN

SUITABLE REPRESENTATIVE FOR FOREIGN TRIP

All departmental heads and prominent attachees must become financially indentified with the business.

Address
"COMMERCIAL"
CARE OF MOTOR AGE, CHICAGO

1906 Model "WHITNEY" Detachable Roller Chain—Patented



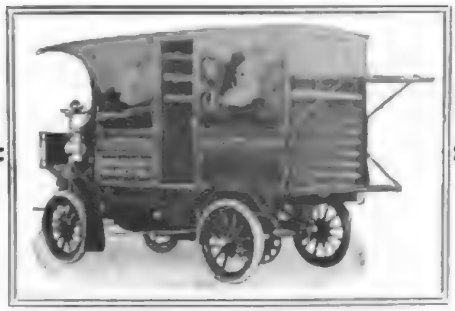
THE WHITNEY MFG. CO., Hartford, Conn.

Investigate "Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the leading American Automobile Manufacturers and have been recognized by other chain manufacturers at home and abroad. If they are made universal six sizes of chain can eventually take the place of over thirty sizes used in the past.

Our new line of chains for 1906 Model Cars have been adopted by a large number of the leaders and they are making remarkable records for quiet running and efficiency.

If interested send for new catalog dated November, 1905.

Digitized by Google



KNOX CARS

Deliver the Goods

They run all day long any day in the year, being air-cooled by the only perfect system extant.

They furnish the quickest and the cheapest method of local delivery.

Every wide-a-wake merchant should

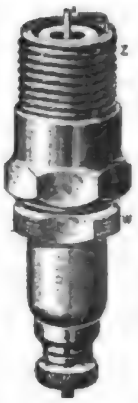
Buy a Knox Waterless Car
Save Money and Be Up-to-Date

A handsome Knox car is an effective advertisement of any business. Besides, it is sure to give absolutely reliable service.

Concise pamphlet, "Commercial Car Tests," on request.
Free demonstrations on request at our agents.
Agents in all principal cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars
Member of A. L. A. M.



The long insulating surface
on the

"Soot-Proof" Plug

makes it impossible for the current to traverse a short circuiting deposit of soot in preference to jumping the spark-gap.

Since to do the former would involve overcoming a much higher resistance than applies in the latter case.

A constant

"Big Fat Spark"

Oil, Heat and Soot-Proof, non-short circuiting self-cleaning.

C. A. MEZGER
203 W. 80th St. ***NEW YORK***

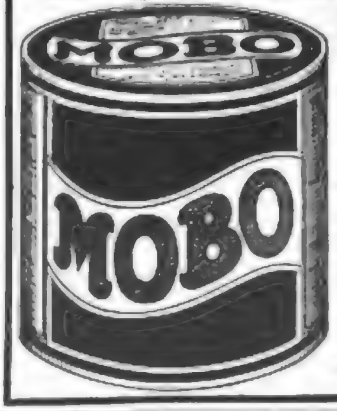
The Care *of the* Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

Mobo, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

MOBO

is unlike common soap, as it positively contains no free alkali. Being a preservative as well as a cleanser, it prevents varnish or paint from peeling or cracking, and adds a fine gloss to the surface.



Mobo may be used with profit on leather goods, harness or woolen fabrics. Cannot harm the most sensitive skin, as it is a purely vegetable oil preparation and absolutely contains no free alkali. Put up in 2-lb. and 8-lb. cans; also in tubs, half barrels and barrels.

If your supply man does not keep *Mobo*, send us his name and address, and we will see your wants are supplied.

JOHN T. STANLEY
New York.

THE

Gray Autochime

PATENTED

Most Practical of Automobile Alarms

Is rapidly forging to the front in popular favor. It is blown from the exhaust, giving a deep, rich, musical tone pleasing to all ears, is operated by a foot pedal, and being small and compact takes up little space.

It is made of finely polished brass, has no soldered parts to melt or jar loose and is very durable.

Your horn cannot be stolen
If you use an Autochime

Why not order one TODAY?

PRICE ... $15.00
Including all attachments

Gray-Hawley Manufacturing Company
...605, 607, 609 Fort Street West...
Detroit, Mich.

Digitized by Google

THE

STANDARD AMERICAN COOLER

The Whitlock Cooler

Was used on the *Locomobile Racer that finished third in the Vanderbilt Cup Race.* It was never touched during the race. *It did its full* duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

Hartford ... Conn.

GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR
STEERING GEAR
CLUTCH
DISTANCE ROD AND BRACKET
PROPELLER SHAFT
LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for Circular No. 12.

THE GARFORD COMPANY, ELYRIA, OHIO

Sales Manager: HAYDEN EAMES, Cleveland, Ohio

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

Keeps Your Car Bright

Keeps Your Car Clean

Makes Old Cars Look Like New

HOFFHEIMER SOAP CO.

CHICAGO

FIREPROOF

PORTABLE

AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.

107 West Monroe St. :: Chicago, Ill.

Digitized by Google

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces **two impulses every time the flywheel turns.** As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

Talkin' of the Cost of Up-Keep

THE ROYAL Tourist Cars are run by their owners at less repair expense than any other motor cars built. You simply do not have repairs Ask an owner of a Royal how much it costs him to maintain it. Then compare his figures with any other car, big or little, touring or runabout. Royal owners everywhere. Ask one.

Why is this? Every part is put together with proper care. Money is freely spent for best materials. That's why.

That is also the reason why we were able to roll our cars over in the Vanderbilt Trials and finish among the first.

ROYAL

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

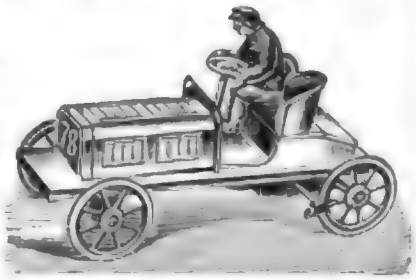
AGENTS

C. A. Dunn & Co., 58th St. and Broadway, New York — G. J. Denham, 132 Columbus Ave., Boston
The H. Duffee Automobile Co., 1449 Mich. Av., Chicago — G. W. Coplin, 424 So. Fifth Street, Minneapolis
Automobile Supply Co. Ltd., 24 Temperance St., Toronto — Motor Shop, 317 N. Broad St., Philadelphia
Westminster Automobile Co., 4206 Olive St., St. Louis.

Latest European Novelties

RACING CAR No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on repuest.



No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 36th St., New York — 318-320 N. Broad St., Philadelphia
20-204 Columbus Av., Boston, Mass. — 406 Erie St., Cleveland, Ohio

MOLINE 1906

MODEL "A" 30-35 Horse Power. $2500.00

Four-cylinder, water-cooled motor. Interesting features—110-inch wheel base, 34-inch wheels with 4-inch tires, pressed steel frame, three speed sliding gear transmission, mechanical oiler, and large roomy body of handsome design.

MODEL "C" 18-20 Horse Power. $1750.00

Practically the same construction as above, except on a smaller scale. Four-cylinder vertical water-cooled motor, 100-inch wheel base, 32-inch wheels with 3 1-2 inch tires, neat new design of double side entrance body.

MODEL "G" 16 Horse Power. $1000.00

Double opposed motor under the body, plenty of radiation, lots of bearing area, new design of wate rpump, mechanical oiler, 86-inch wheel base, running boards at side, and detachable side entrance tonneau body.

Advance circular ready for distribution

Moline Automobile Co.
East Moline, Ill.

Digitized by Google

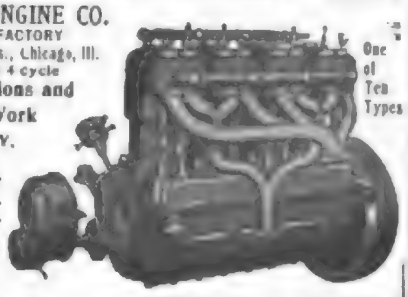
MOTORS — All Commercial Sizes

CONTINENTAL ENGINE CO.

NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle

Designs, Specifications and Special Contract Work
OUR SPECIALTY.

4-Cyl. air cooled, weight 90 lbs., total. 3 Cyl. air cooled. 75 lbs. total.



One of Ten Types

Telephone North 1801

VERTICAL AND HORIZONTAL

No. 66

Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The handsomest and most powerful of all light projectors—

The Neverout

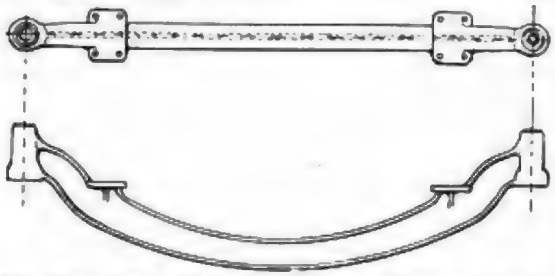
Mirror Lens Searchlight

The gas it burns is best furnished by the new *Neverout* Patent Safety Gas Producer

Makes gas only as needed and the flame is steady and intensely white.

Write for free illustrated catalogue.

ROSE MFG. CO.
912 Arch St. Philadelphia

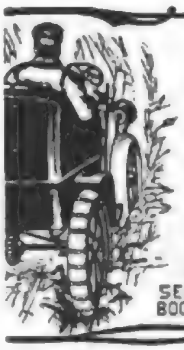


The Winton Front Axle Casting of Parsons' Manganese Bronze

Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp & Sons Ship & Engine Building Company

PHILADELPHIA, PENNA.



MUD

FORGET IT AND USE
WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
28 MOORE ST.
NEW YORK CITY.
SEND FOR BOOKLET "C"

WE ARE IGNITION SPECIALISTS

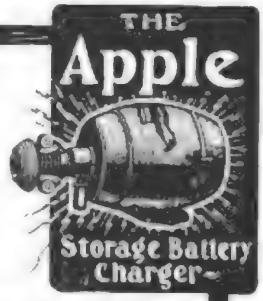
If you have any trouble with your ignition, write to us and we will tell you just what to do. We make more than 80 different articles for ignition purposes, including our

Apple Storage Battery Charger

A perfect storage battery charger. Gives a strong, steady current that never fails. No trouble to put on any car or engine; our friction driving gear makes installation easy. See that your entire car has an Apple electrical equipment.

FOR FULL INFORMATION WRITE

The Dayton Electrical Manufacturing Co. 75 Beaver Bldg. DAYTON, OHIO.



STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

LATEST TYPE WILLARD LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

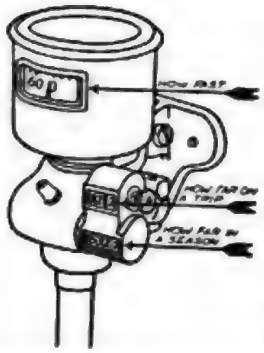
Automobile Bows

ARE BEST

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio

Digitized by Google



THE AUTO-METER

on a car tells the speed of travel and the distance traveled. It is absolutely accurate.

"Built Like a Chronometer."

When you are whirling along, a glance at the Auto-Meter before you, tells you **exactly** how fast you are going if your pace be as slow as a fraction of a mile or as fast as 60 miles an hour.
When a trip is finished, the Auto-Meter tells **exactly** how many miles you have gone on that trip.
When the season is over the Auto-Meter tells **exactly** how many miles you have covered during the season.
All this is worth while. Is it not?
Get acquainted with the Auto-Meter. It will lead to lasting friendship.
Write for catalogue and pamphlet, "Indisputable Evidence." The latter gives the interesting experiences of many prominent automobile owners.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston, Mass. Warner Instrument Co., 1881 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

A New Era in Carbureters

THE GARLLUS AUTOMATIC CARBURETER is a perfectly automatic carbureter, without a float, without compensater, easy to start, sure to run. So simple it cannot get out of order. Greatest economy. Highest efficiency. An easy starter on four cylinder engines. Money refunded if not satisfactory.

The Goddard Machine Co., Holyoke, Mass. says: "The GARLLUS CARBURETER gives a 10 per cent higher efficiency than any carbureter we have tried, producing in a test two h. p. more than the ..... and one h. p. more than the..... We believe in it thoroughly." (These were two prominent float feed carbureters.

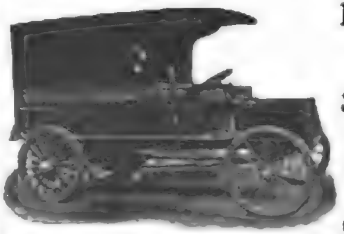
For further particulars address

THE WINKLEY COMPANY, P. O. Box 243, Detroit, Mich.

Synnestvedt Machine Company

Pittsburg, Pa. :: Manufacturers of

Electric Vehicles



Delivery Wagons
Trucks
Stanhopes
Surreys
Busses

Eastern Branch, 1005 Drexel Bldg., Philadelphia.
Commercial Automobile Co., Distributors, 1356 Michigan Ave., Chicago.

Monogram Oils

...Made by...

Columbia Lubricants Co. of New York

78 Broad Street, New York City

"FIRST AID TO AUTOMOBILES"

DISTRIBUTING DEPOTS

...Also at...

Boston Cleveland Washington Chicago
Denver San Francisco and Toronto, Canada

Veeder

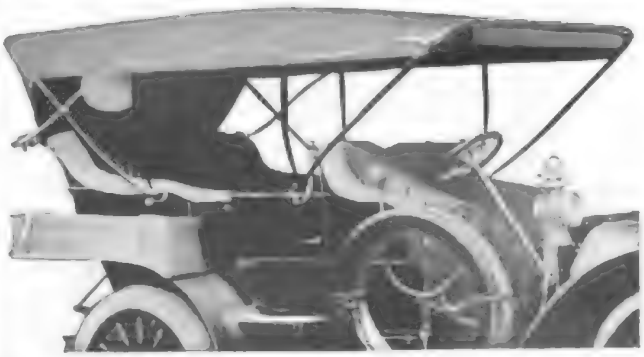
ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.



WE CAN MAKE POOR TOPS BUT DON'T

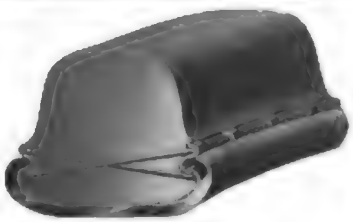
LONDON TOPS are correctly designed for each model car—are built in the best possible manner to stand the wear and tear a top is subjected to. Heavy bows, reinforced, stayed and cross stayed, padded to give proper shape, front and back stay straps, with or without joints.

The Best Possible in Top Construction

Each top has Detachable Roll Front, Front Side, and Side and Rear Curtains, with ample celluloid lights—ready to attach to cars.

London Auto Supply Co., 1229 Michigan Ave. CHICAGO

Digitized by Google



Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types
and made to fit any standard clincher rim in which pneumatic tires are used

OBSERVE THE FASTENING DEVICE

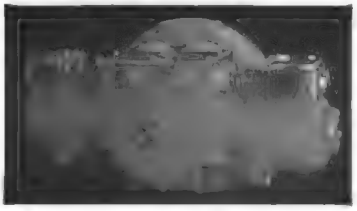
Tire Fastener for Ordinary Work

RESILIENT AND "THERE WITH THE WEAR"

The Motz Clincher Tire & Rubber Co.
AKRON, OHIO, U. S. A.

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors

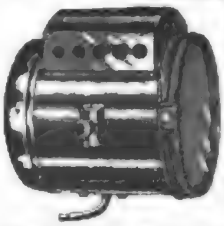


The A. Streit Machine Co.

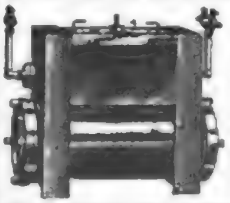
CINCINNATI OHIO

COLUMBIA SEARCH LIGHTS AND GENERATORS

Generator No. 3—Capacity 54 oz.



Will supply from one to six burners. Equipped with two Carbide Cups. One cup can be used on from one to six burners, keeping the other in reserve, or both cups can be used at the same time. When large quantities of carbide are used in the generator, considerable heat is evolved, and it is desirable to keep the generator as cool as possible



Models: A—5-in. Mirror Lens. B—6-in. Mirror Lens. C—7-in. Mirror Lens. D—8-in. Mirror Lens. With Adjustable Burners

We guarantee our Generators to be better than most, and as good, if not better, than any.

HINE-WATT MFG. CO., 58-60 Wabash Ave. Chicago

IMPERIAL WIXON Compound Air Pump

The pump with the largest capacity.
The easiest pump to pump.
The best pump for automobilists.
You need not buy it until you have tried it.
It saves tire troubles.

$5.00 ON APPROVAL

Ask any dealer or write us. Do it now.

THE IMPERIAL BRASS MFG. CO.
249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

1905 · VESTA · 1905 Ignition Battery

4 Volt, 60 Amp. hours
9½x8⅛x8½. Price, $18.00
6 Volt, 60 Amp. hours
9¼x5⅝x8½ Price, $27.00
8 Volt, 60 Amp. hours
9½x7x8½. Price, $36.00

Satisfaction Guaranteed by

VESTA ACCUMULATOR CO.

1336 Michigan Avenue, CHICAGO
Phone South 962

Eastern Agents, THE H. H. HARDY CO.
225 W. Broadway, New York

HIGHEST GRADE ONLY

Aluminum Castings

THE ALLYNE BRASS FOUNDRY CO.

CLEVELAND AND DETROIT

Soot Proof

"Sometimes they try a cheaper plug for a little while but they always come back to the 'Soot-Proof.'" writes a Wayne, Pa., dealer. "It is the Spark Plug that we can conscientiously recommend." That tells the story for any dealer.

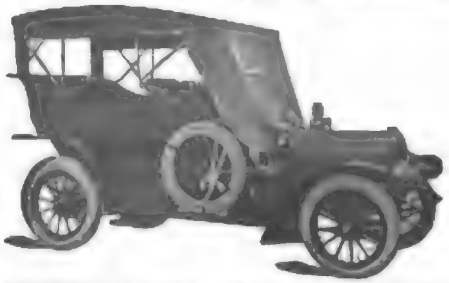
Besides being soot-proof it is also wear-proof for six months of ten hours a day. Guarantee with every plug.

All sizes at dealers or by mail $2. Write for booklet.

C. A. MEZGER, 203 West 80th Street, New York

Digitized by Google

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

Model E. 30 H. P. Glide, Vertical Four Cylinder Motor

1906 MODELS Now Ready

Model E is a 30 H. P. vertical four cylinder car with bevel gear drive.

Model F is an 18 H. P. two cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS

The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.

Chicago Representatives, Holmes-Schmidt Motor Co., 1502, Michigan Ave.

MOSLER "SPIT-FIRE" PLUGS

THEY ACTUALLY "SPIT-FIRE" while OTHERS SPARK ONLY

Flame { Facilitates Sparking. Makes Plugs Spit-Fire. Acts as Condenser of Electricity. Protects Insulation and Sparking Points.

Standard Size, $1.50, Postpaid. Special, $2.00

MOSLER TIMER

With Patented Protector, $1.50 additional.

Used by the Leading Manufacturers

Insist upon Name and Patent Dates

BEWARE of Valueless Imitations.

The Mosler Timer

is constructed on a Scientific Basis

WRITE FOR LIBERAL DISCOUNTS

A. R. MOSLER 1679 Broadway New York

Baldwin Automobile Chains and Sprockets

Best Material

Accurate Construction

SEND FOR CATALOGUE

BALDWIN CHAINS AND SPROCKETS

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

K. Franklin Peterson, Western Sales Agent 166 Lake Street, Chicago, Ill.

STORM APRONS

Runabout size, 2 openings	$7.50
Tonneau size, 4 opening	11.00
Touring Car size, 5 openings	13.50
Capes, 1 opening	2.00

One Storm aprons are made of heavy-weight rubber cloth with plaid lault. Prices include fastenings for attaching to any machine. Terms—Cash with order. Money back if you are not satisfied.

Weed Chain Tire Grips

Send us the size you need and we will quote you a low price.

Mr. Dealer: Write us for our "Special Deal" on above goods.

THE BALL-FINTZE CO., Newark, O.

WITHERBEE

Storage Batteries

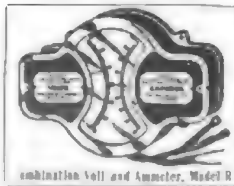
Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your house or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK



Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works: Waverly Park, NEWARK, N. J.

New York Office, 74 Cortlandt Street

Combination Volt and Ammeter, Model R

Switchboard Instl Type 5

Gilbert Auto Fabric Supplies

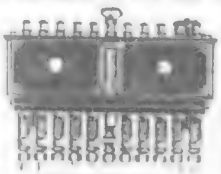
LOOK FOR THIS NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.

New Haven, Conn

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed is itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St. NEW YORK, 49th St. & 8th Ave. PHILADELPHIA, 250 N. Broad St. Buffalo, Cleveland Automobile & Cycle Co., 640 Main St.
ROCHESTER, 139 South Ave. BOSTON, 39 Stanhope St. DENVER, 1449 Clarkson St. SAN FRANCISCO, 635 Howard St.
CHICAGO, 204 E. Lake St. ST. LOUIS, 3944 Olive St. ST. PAUL, 372 Minnesota St.
DETROIT, 265 Jefferson Ave. PITTSBURG, 5905 Centre Ave. SAVANNAH, 300 Bull St.
MINNEAPOLIS, 3d Ave. S. & 5th St. PASADENA, 33 S. Raymond Ave PORTLAND, ORE., 140 Fifth St., N.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

---

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 511 Tremont St., Boston, Mass.

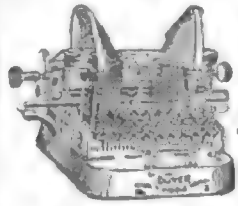
We Want Agents

for the

OLIVER Typewriter

—the standard visible writer—

In cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

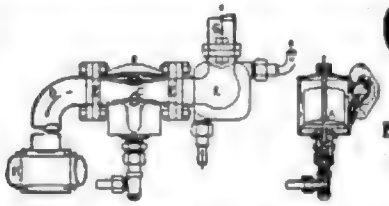
SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

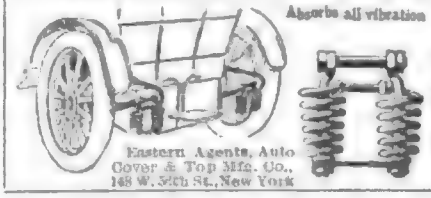


G. & A. CARBURETTORS ARE GUARANTEED AUTOMATIC

By actual tests of the leading French makers. Float Feed Carburettor without complicated parts in many so-called "Automatic Carburettors" gives constant mixture at all speeds of motor.

FURTHER INFORMATION ON APPLICATION

ASTER CO., 1591 Broadway, New York



Absorbs all vibration

The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

Eastern Agents, Auto Cover & Top Mfg. Co., 148 W. 58th St., New York

SUPPLEMENTARY SPIRAL SPRING CO. 4527 Delmar Ave., St. Louis, Mo.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1303 Michigan Ave., CHICAGO, ILL. Tel. South 1301
ST. LOUIS, MO.

EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

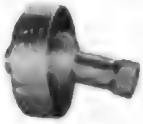
OLIVE AND WALTON STREETS

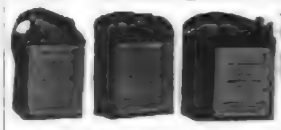
ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas

Digitized by Google

This is NOT
A FAIRY TALE
We guarantee to increase the spark in your cylinders by
ONE HUNDRED PER CENT
Through our PATENTED
Steel Armored Ignition Cable
Adopted by the Leading European Firms
It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!
HERZ & CO., Civil Engineers 187 Elm St., New York
The largest manufacturers of Ignition Material in America.

A Glance Tells You

That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.
SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.
Direct factory representatives: E. Franklin Peterson, 166 Lake street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.


AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

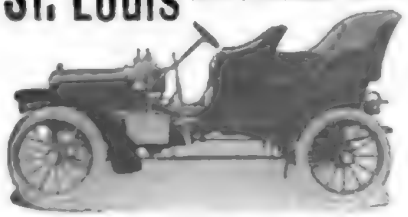
ROBERT VOLT-AMMETER
For General Battery Testing—Guaranteed
Tests both Volts and Amperes.
3-VOLTS 6-VOLTS
30-AMPERES 30-AMPERES
Send for Catalogue.
ROBERT INSTRUMENT CO.
63 Shelby St. Detroit, Mich

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

SKINNER
Compound Air PUMP
200 lbs. pressure with less effort than 50 with any other
Automobile Tires Quickly and Easily Inflated
$5 ON APPROVAL
AT ALL DEALERS
LET US SEND YOU A SAMPLE

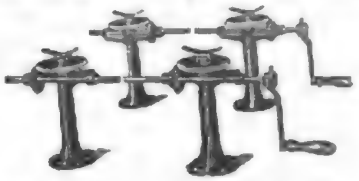
Sales Agents
New York—E. J. Willis Co.
" " Chas. E. Millet
" " A. B. Kanner
" " Wm. Wooster Co.
" " Judson-Downing Co.
Boston—Iver Johnson Sptg. Goods Co.
Boston—Boston Cycle & Sundry Co.
Baltimore—Coggins & Owens
Chicago—Excelsior Supply Co.
Denver—The Consolidated Sup. Co.
Detroit—Monmer Auto & Cycle Supply Co.
Providence, R. I.—Pope Mfg. Co.
St. Louis—A. J. Dyke Auto Supply Co.
San Francisco—Van Zandt & McIntyre
Rochester, N. Y.—The Sidney B. Roby Co.
Washington, D. C.—National Elect. Supply Co.
SKINNER & SKINNER
Manufacturers
4133 Indiana Ave. CHICAGO

The IGNITION PROBLEM is SOLVED
in the "Lacoste" High Tension Magneto for Jump Spark Ignition
We guarantee this device to be ABSOLUTELY PERFECT
We have done the experimenting.
No BATTERIES. No Coil. No COMMUTATOR.
Everything for Electrical Ignition.
LEON RUBAY, Sole U. S. Agents, 140 W. 42d St., N. Y.

St. Louis 18-22 30-34 Actual H.P.

"RIGS THAT RUN"—We Make Them
ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS PEORIA, ILL.

Peerless Automobile Jacks
Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight 6¼ lbs., price $2.50. Express prepaid in the United States. OLIVER MFG. CO., 205 S. Desplaines St., Chicago, Ill.

DIXON'S GRAPHITE
Motor Lubricants
Interesting booklet and samples FREE.
Joseph Dixon Crucible Co.
Jersey City, N. J.

REST YOUR TIRES with the "Springfield" Auto Lift

Showing Lift in Position to Receive Car.
You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.
E. J. DAY & CO., Pacific Coast Agents, San Francisco
THE SHAWVER CO., Springfield, O.

Sta-Rite
DEALERS
Do not buy spark plugs of half a dozen concerns, it isn't necessary.
Condense Your Orders
thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 3/8 to 14 O.D. Secure July, 1905, price list.
The R. E. Hardy Co.
225 W. Broadway, N. Y.
No. 4, 3/8-in. Porcelain, $1.00
P. J. DANEY 631 Wabash Ave., Chicago
No. 34, 3/4-in. Mica, $1.75

MOTOR CAR SPECIALTIES
and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX
FAYETTEVILLE, N. Y.

"SOLDERENE".
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.
Sample 10c. Dealers Write for Price.
CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

Eclipse Pocket Ammeter
For General Battery Testing
0 to 20. 0 to 30 Amperes.
"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.
Eldredge Electric Mfg. Co.
Springfield, Mass. U. S. A.

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

SPROCKETS
Chains and Differentials
CULLMAN WHEEL CO.
1021 RUNNING STREET, CHICAGO, ILL.

Special Design Finest Quality Built to Order
BODIES AND TOPS
C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., Ft Wayne, Ind

CHAIN TOOL

35c

THE HUSKY KIND

SENT PREPAID FOR 48c

THE MOTOR CAR SUPPLY CO.

1427 Michigan Avenue CHICAGO, ILL.

NEST CAT. READY

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building :: :: Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 352 JACKSON BOULEVARD, CHICAGO

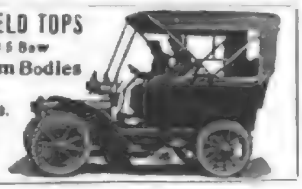
SPRINGFIELD TOPS

3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

72 Birnie Ave Brightwood SPRINGFIELD MASS.



Eclipse Tops

Look Better Wear Better Made Better Are Better than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.

352 S. Claremont Ave. CHICAGO.

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation does not evide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.

109 WALKER STREET NEW YORK

NON-FLUID OILS

Are recommended in the instruction books of several mfrs of cars. They reduce lubrication and repair bills to a minimum. Ask your dealer or write us today for free sample; same will be convincing.

N.Y & N.J. Lubricant Co. 79 9th St., San Francisco

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company

Pittsburgh, Pa.

HOT SPRINGS, ARK.

Only 20½ Hours from Chicago

VIA THE

WABASH

You can leave Chicago daily at 11:30 A. M., on the

BANNER BLUE LIMITED

the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.

Write for free Booklet telling all about this popular health and pleasure resort.

Ticket Office, 97 Adams St.

CHICAGO

C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A. Chicago.

SOMETHING NEW

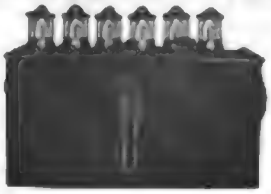
IN BOTH AIR AND WATER COOLED **MOTORS** WRITE US FOR PARTICULARS

FAST MCH. & TOOL WKS.

25th and Greenfield Aves. MILWAUKEE, WIS.

Force Feed Lubrication

Constant Sight Feed. No Liquids



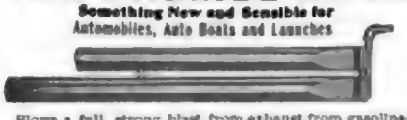
McCord & Co., 1402-80 Old Colony Bldg., Chicago

E. J. Day & Co., Pacific Coast Distributors 324-326 Golden Gate Avenue, San Francisco, Cal.

A PLEASURE TO HEAR

THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.

970 Hamilton St., Dept. B, CLEVELAND

New York Branch, 148 West 80th St.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

Auto Top Bronzes

Bow Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tools, Boxes, Guard Bolts, etc.

C. W. COOPS CO.

3 Appleton St., Boston, Mass.

Standard Roller Bearing Co.

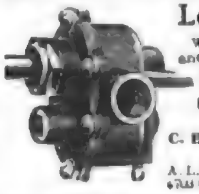
STEEL BALLS

BALL BEARINGS

Roller Bearings

Automobile Axles

Send for Catalogue. PHILADELPHIA



Lobee Gear Pump

Well adapted for Oldsmobile and other makes. Works with any type of radiator. Easily attached. Write for prices.

LOBEE PUMP CO., 240 Terrace, Buffalo, N. Y.

C. E. Miller, Agent, 97 Reade St., New York

A. L. Dyke Automobile Supply Co. 6-8 Olive St., St. Louis, Mo.

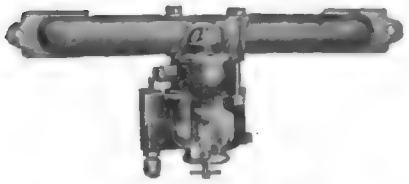
ALUMINUM, PHOSPHOR BRONZE BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFFELLER BRASS FOUNDRY CO.

BUFFALO, N. Y.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
Packard and Baker Electric
CARS FOR RENT
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributers for
Stoddard-Dayton and Royal Tourist
Phone [illegible]
1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois
1312 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES
We are closing out all sh lines, together with all sec ond hand and shop worn models to make room for 1906 agency goods, now coming in—Hoffman ton neau, new, $700; Murray runa bout, $200; Oldsmobile, $200; Buckboard, $200; Gale, $450; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Fraser-Miller," "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.
MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 40
EXCELSIOR SUPPLY CO
ESTABLISHED 1876 CHICAGO

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1528 Michigan Ave., Chicago
Telephone, South 1658

GOOD AGENTS WANTED
REO
SEND IN APPLICATION
RALPH TEMPLE
309 Michigan Avenue CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
136 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer, Stevens-Duryea, Orient, Pierce-Arrow, Oldsmobile, Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for CHICAGO and MILWAUKEE
1323-26 Michigan Ave. Phone 1332 South
321-25 Fourth St. Phone 2781 Main

Digitized by Google

CREDIT

WHERE CREDIT IS DUE

(A Remarkable Letter—Read It)

Absolutely at my own expense and without solicitation, I insert this advertisement in MOTOR AGE so that all who care to be truthfully advised on the automobile tire question may purchase with the assurance of obtaining comfort and economy.

When I ordered my 1905 car at the Chicago Automobile Show, I specified Goodyear detachable 34x4½-inch tires.

My 1904 experience with another make proved so distressing, uncomfortable and unreliable, that I made a most careful study of the tire question at the New York and Chicago 1905 shows. I was at that time thoroughly satisfied that the mechanical principle of the Goodyear detachable rim was sound. I now know it to be.

My car with five passengers weighs very nearly 3,900 pounds. From June 1st to October 31st my car traveled 7,211 miles. I have six casings and, to start out with, had seven inner tubes. Two of these inner tubes I returned on October 15th just as I had received them from the Goodyear people, being convinced from my season's experience that I would have no use for them this year.

My repair expense for vulcanizing has thus far been less than $20.00.

My experience has been that of practically perfect comfort, a marvelous showing almost beyond comprehension, no doubt influenced by the following points of perfection.

I have found my Goodyear tires capable of being very easily removed and put on; absolutely water-tight when inflated; safely locked when inflated or deflated, no rim cutting if car is driven judiciously with deflated tires; positively no creeping; a quality of rubber that resists many a cut and puncture, which would puncture or burst other tires.

The above qualifications have invariably enabled me to feel safe when starting on a long journey, I go and return, trip after trip, without a stop, having made a dozen runs of 150 miles each day and several of from 175 to 185 miles from morning until night.

Made a round trip to Cleveland from Chicago after my tires had already run 5,000 miles, without even a puncture, although I voluntarily removed one casing before leaving Cleveland because of a cut in the outer fabric which had caused a sand blister.

Most of my motor friends know this story to be an absolute truth. None of them ever heard of my being in tire trouble. I have had a total of four punctures in the 7,211 miles, and in all this mileage I have only put the pump to the valve two or three times, except when I took off my tires for vulcanizing when needed which only occurred on a very few occasions, one tire at a time.

I feel confident that my six tires will carry me at least 5,000 miles more and I would not be surprised if some of my tires would be on the car at the end of next season, as I can really see no particular wear on them.

If anyone doubts the above statement, I should be glad to prove to him that I have given only absolute facts.

With such a showing as above stated, am I not warranted in spending a few dollars for this advertisement so that the merit of a good thing may be known to the thousands of automobilists who are putting in hard work on the tire difficulty?

ALFRED BERSBACH
2568 N. Hermitage Ave., Chicago

COOLERS FENDERS

HOODS TANKS

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

Automobile Fluids

Non-freezing Fluid

Guaranteed.
Thin as water.
Cools as well as water.
Circulates as well as water.
Freezes at 36 below zero.
No acid. Won't corrode or damage system in any way more than water.

Rubber Fluid

Small Tube, 25c. 1-4 pt., 75c.

Guaranteed quicker and better than vulcanizing.
Repairs casings as well as tubes.
Hot roads won't affect patches.
Don't throw away old casings when we furnish the canvas and fluid rubber.

Body Fluid

Feeds the varnish; don't deaden it.
Removes all scratches.
Easily applied and makes body look like new.

Special prices to dealers

MARION FLUID CO. FIRST & ADAMS STS. MARION, IND.

The "Breech-Block" Plug

The Plug With a Handle

To take out your *watch* or open a *Breech-Block* requires just the same *time, same tools, same effort*, and *one twist* cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it *drops* out of its holder, and the gaskets of copper *drop* with it. No digging!

It is *nickeled* inside and out. *Highly polished* and dust-proof. Sparks between *two adjustable* points and not between *one point* and the shell. Its points are *protected*.

Porcelains are *hand turned* and so perfectly glazed that soot cannot *stick* to them. Their *threads* are cut to perfection, and every particle of the idea of cheapness is left out of them. Can you think of a way to improve them regardless of cost?

Postpaid, Anywhere, $2. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, Ill.

If You Are a Judge of Good Plugs

so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 2 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss"? See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

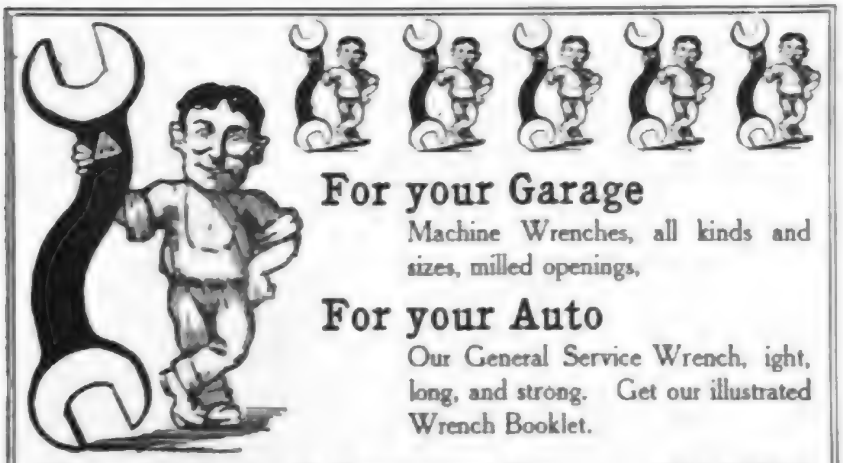
because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

C. T. HAM MFG. CO.

ROCHESTER, N. Y.

Digitized by Google



For your Garage

Machine Wrenches, all kinds and sizes, milled openings.

For your Auto

Our General Service Wrench, ight, long, and strong. Get our illustrated Wrench Booklet.

The Billings & Spencer Co. : HARTFORD CONN.

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. in the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog

WHAT WE HAVE:

The **HERZ TIMER**—16 models, to fit any make of motor: Remember: It's TOOLSTEEL vs. TOOLSTEEL.
Bougie Mercedes—double sparg.
Herz-Distributor—1 coil for all cylinders.
Gusset Coils. Carpentier-Interrupter.
New prices—Single, $16; double, $20; triple, $28; quad, $30
A line of switches of original design; contacts dust-proof covered.
Detachable terminals
Wire terminals with groove.
Special ignition cables and wires.
Everything for the ignition.
One grade: The Best.

HERZ & CO. Civil Engineers
187 Elm Street, New York
Write for free Vademecum of Ignition.

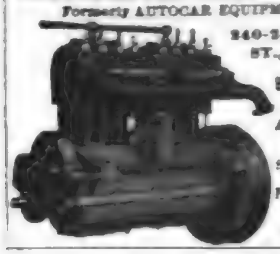
CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.

Formerly AUTOCAR EQUIPMENT CO.

240-244 W. LAKE ST., CHICAGO



BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETTIBONE & MULLER

Direct Factory Representatives

HUSSEY DROP FORGINGS

AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2020 Axtell Street CLEVELAND, OHIO

Atwater Kent Timer

"No Wabble."
"No Adjustments."
"Two Bearings."

"Contacts Run in Oil and Entirely Enclosed." "Durable Electrically and Mechanically." "Copied from None."

Atwater Kent Mfg. Works,
135 North Sixth St, Philadelphia, Pa.

For Boiled Down Information About

AUTOMOBILES & WELCH CARS
in general in particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.
Factory, Pontiac, Mich.

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.

MISCELLANEOUS.

Advertisements under this head 2 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

PACKARD FOR SALE—Model L 4-cylinder, changed at their factory to a two man car; rear seats can be replaced if desired; has shifting top, glass front, tire box back of rear axle; large carrying capacity back of seats; tires and everything in "A1" condition. Address "Flyer," care MOTOR AGE, Chicago.

FOR SALE—Autocar runabout, excellent condition, $350; can be seen in Chicago any time. Address Box 15, MOTOR AGE.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Olds runabout in good condition; consider no trade; a bargain at $275. R. M. Walker, Monroe City, Mo.

FOR SALE—Oldsmobile runabout in A1 condition; equipped with top, lamps, for $200. Must go at once. F. L. Schlosser, Flagg, Ill.

FOR SALE—1905 Franklin type A, detachable tonneau; Franklin red; used but a few months; good as new, looks new; perfect condition guaranteed in every detail; equipped with full set of lamps, front and rear, Vedder odometer, one complete new tire; reason for selling, the owner desires to buy a car carrying a larger number. Bloomsburg Auto Co., Lock Box 517, Bloomsburg, Pa.

FOR SALE—Packard model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. Also model C Winton, in A1 condition; run less than 2,000 miles; tires all good; equipped with Shelbey carbureter; former owner has purchased model K Winton; can be bought for $1,000 if taken at once. Bates Odenbrett Auto Co., Milwaukee, Wis.

FOR SALE—Toledo steam automobile; two 16" fire tube boilers. Wanted, one White flash boiler and a four-cylinder marine engine. Spencer Bros., Charlerol, Pa.

FOR SALE—Garage established with Winton and Cadillac agencies for 1906 at Spokane, Wash. Fine location and a good storage business. Will sell at invoice or will consider partnership. Address G. W. Miller, Broadway and Madison Sts., Seattle, Wash.

FOR SALE—New 10 H. P. double cylinder machine, clincher tires, for 4 passengers, nearly completed; material cost $700; $300 takes it. New set of axles complete, artillery wheels, with clincher tires; $100 takes these. Box 158, Perry, Mich.

1905 RAMBLER, surrey type I, seats five people, extension cape top, glass front, Prest-O-Lite tank, gas and oil side and tail lamps, all for $875. Demonstration will be given. E. W. Siefert, Shelbyville, Ind.

FACTORY TO LET

Owing to the fact that we have removed our lantern plant into more spacious quarters in our new factory building, just completed, our factory No. 2 at Syracuse is for rent. It is a two-story attic building with extra high ceilings. It contains on the ground floor 19,871 sq. ft; second floor, 18,815 sq. ft.; attic, 4,320 sq. ft.; total, 43,006 sq. ft. of floor space; 125 horse power steam engine; two 85 horse power steam boilers; equipped with sprinkler system. Adjacent to canal and railroad; switch in yard. Can furnish 30,400 sq. ft. yard space. Location, Wilkinson St. and Leavenworth Ave., Syracuse, N. Y. Mention MOTOR AGE. R. E. DIETZ COMPANY, Syracuse, N. Y.

FOR SALE—1904 Winton with canopy top, plate glass front, 4 lamps and tools complete; guarantee perfect order; sell for $1,000. Wm. T. Sigler, Piedmont, W. Va.

FOR SALE—One No. 5 Barns lathe, with full equipment, $70; A1 condition. T. H. Bolte, Kearney, Neb.

SECOND-HAND Dow and Knoblock spark coils, good working order, $3 each; one new inner tube for 36x3 single tube tire, $3; two G & J 28x3 clincher with inner tubes, $10 each, worn a little; Luchenheimer mixing valve, ⅝ in., new, $2.50. C. W. Lindsay, Anthon, Ia.

FOR SALE—New double opposite cylinder, 16 horsepower gasoline engine, spark coil and carbureter; cost $450. Full particulars, C. E. York, Grand Rapids, Mich.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

NEW YORK AUTOMOBILE SALESMAN

Now branch manager, open to engagement Jan. 1st; exceptional qualifications and wide acquaintance throughout eastern states. Address Eastern, MOTOR AGE.

WANTED—1904 tonneau car; must be a bargain. F. S. Wiley, West Salem, Ill.

Digitized by Google

FOR SALE—Knox surrey; two-cilinder 16 h. p. engine, full leather top, all accessories; in first class condition; perfect running order; one of the finest cars ever turned out; lots of power; easy riding; perfect air cooled engine for all seasons and every kind of weather; a thoroughly efficient high grade car and will be sold at a ridiculously low price. If interested, write for full description. Knox Surrey, Motor Age.

FOR SALE—1904 Model A Cadillac for immediate sale, $350; machine in fine order, practically as good as new; will demonstrate at any time; big bargain. Address 36 South First Ave., Marshalltown, Iowa.

FOR SALE—Winton "C," 5 lamps, generator and extras; must sell quick; $1,300 cash; will demonstrate. M. A. C., Motor Age.

WANTED—To trade a 16 H. P. double opposed model touring car, detachable tonneau, sliding gear transmission, 3 speeds, head and reverse, 32x4 tires, in fine condition; for 24 to 40 H. P. 4-cylinder car; will give reasonable cash difference. Senate Club, No. 106 Front St., Marietta, Ohio.

PACKARD, 15 H. P., automobile, $200; complete with all accessories, lamps, horn, extra tires; in first class running condition. A. J. Houle, South East St., Holyoke, Mass.

FOR SALE—Toledo steamer, $95; will trade. 16 E. Washington St., Huntington, Ind.

FOR SALE—Rambler runabout, in first class condition, $250; must sell. Chas. Newcomb, Huntington, Ind.

FOR SALE—One new Oldsmobile, just from the factory; will sell at a bargain; also one Elmore, second-hand. Address Green's Fork Auto Agency, Green's Fork, Ind.

AUTOMOBILE SCHOOL

CHICAGO SCHOOL OF MOTORING.

The original Automobile School in Chicago. One hundred and eighty graduates the past year, to whom we refer upon request.

Automobile owners, prospective buyers and young men wanting to become expert chauffeurs will save a great deal of money and a lot of worry by studying the mechanism, care and repair of gasoline automobiles in our shop, where all parts are open so you can see how they are made and how they operate. We give thorough and practical instruction. Competent chauffeurs supplied.

CHICAGO SCHOOL OF MOTORING,
264 Michigan Ave. Phone Har. 119.

FOR SALE OR TRADE—2 sections, 1,280 acres of good ranch land in Presidio county, Texas; will trade for automobiles. Alliance Motor Car Co., Alliance, Ohio.

WANTED—1905 two-cylinder runabout in exchange for Rambler Model E. Address F. P., care Motor Age.

FOR SALE—6 H. P. air cooled motor, $75; 10 H. P. water cooled motor, $85, new; 15 tube radiator, $10; hood, $12; McCanna 4 feed lubricator, new, $15; No. 10 Rose headlight, $12. Any of these parts sold separately. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Automobile, $150. C. E. Shook, Waterloo, Iowa.

WANTED—Man thoroughly familiar with Stevens-Duryea cars to take entire charge of repair department. State experience, references, age, salary expected, etc. Address S. D., care Motor Age.

WANTED—A first class superintendent for an automobile accessory factory; must be thoroughly conversant with all high grade modern machine tools. Address, stating experience and salary expected, Manufacturer, care Motor Age.

FOR SALE—Autocar, four-cylinder, good order, equipped with cape top, gas lamps, odometer, etc.; price $1,650. W. T. K., 279 Washington St., New York City.

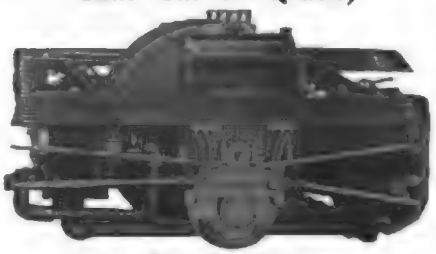
REWARD offered to any one locating a type 7 Searchmont touring car, factory number 181, green body, dark brown running gear. Address Stolen, care Motor Age.

WILL TRADE quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

FOR SALE—Rambler Model E, good order, cheap. Address D. McC., care Motor Age.

EQUALIZED SPRING TRUSSED FRAME
OF THE
1906 Logan
That Car of Quality

One of Many Points of Strength



Patent Pending

One of Many Reasons for Comfort

We are ready to talk business for 1906. :: Better write to-day.

THE LOGAN CONSTRUCTION CO.
CHILLICOTHE, OHIO

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—A 1906 White Steamer, side entrance, never used and absolutely perfect; owner leaving for Europe soon. J. M. Shelley, Omaha, Neb.

WANTED—Cash buyer for 1905 Olds runabout, excellent condition. Write for particulars, Box 58, R. F. D. No. 2, Manchester, Iowa.

FOR SALE—Remodeled type eight Autocar. Four cylinder 20 h. p. Rutenber motor, Splitdorf dash coil and commutator, Shebler carbureter, McCord dash, automatic oiler, six lamps, baskets, storm covers and extra parts; tires all new, 32x3½; will carry five passengers anywhere; $1,250. 1406 Oxford St., Philadelphia.

WANTED—Auto in exchange for old plantation in Scott Co., Tenn.; clear title; no incumbrances. Address Box 531, St. Ansgar, Ia.

FOR SALE—Late '04 Packard, in fine condition, with $300 worth of extras; extension top, headlights, speedometer, odometer; $2,100 f. o. b. Kansas City; run 4,300 miles. N. T. Haynes, 3508 Central St., Kansas City, Mo.

FOR SALE—At a bargain, one 1905 White Steamer, complete with cape top, bampers, full lamp equipment, generator and lamps; been used little, practically new, in first class running shape; 3 extra cases, 2 extra inner tubes; full equipment cost about $2,800; will sell for $1,600 if taken at once. Will gladly demonstrate. Jacob Roth, Erie, Pa.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—A 1905 Model "F" Knox touring car, with glass front, 32x4 tires; guaranteed to be in A1 condition; will sell cheap for cash. Address W. E. W., 219 South 6th St., Minneapolis, Minn.

FOR SALE—Marble Swift friction transmission, lever, joints, brake; new; bargain. 729, 164 Dearborn, Chicago.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

SPARK-PLUGS—Large lot for sale at low figures. The best plug on the market. Standard or metric. Will job whole lot or sell in smaller quantities. Write for price, stating number wanted. Mechanical Plug Company, 3924 Olive St., St. Louis, Mo.

FOR SALE—One Olds runabout, one four cylinder, 20 H. P. gasoline car; eight steam cars, including runabouts and touring cars; also steam delivery wagons; all in first-class running order. Write for particulars if interested. K. A. Grout, Orange, Mass.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our Tom Tire Pump fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

NYBERG AUTOMOBILE WORKS, CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

CHICAGO
and
CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

MONON--C. H. & D.

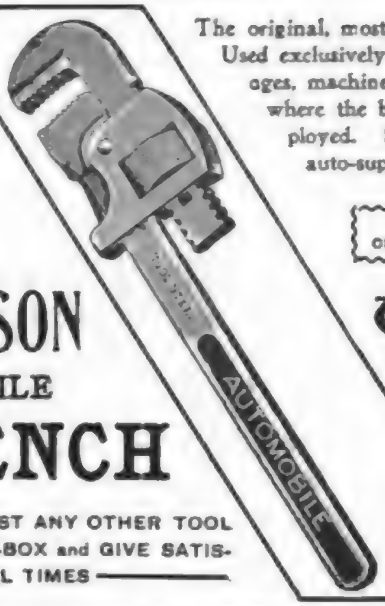
Ride this way once and you'll ride again—we think.

Chas. H. Rockwell, Traffic Manager
Frank J. Reed, Gen'l Pass. Agt.
CHICAGO

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston Mass. U. S. A.

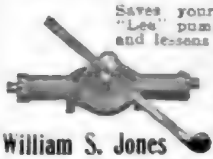
IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

No. 11 Dash Coil

THE SUPERIORITY OF AMERICAN COILS is widely known
WE MAKE ALL STYLES
Neat, Compact, Efficient
Write for 1918 Catalog Showing our complete line
American Coil Co.
FOXBORO, MASS.
Auto Supply Co., 1682 Broadway, New York Agent
Geo. H. Bill, 305 McAllister St., San Francisco, Cal.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

LEA TIRE PUMP



Saves your tire bills. The "Lea" pumps tires up evenly and lessens wear. Easy to operate, too.
Write for illustrated book B. Inquire about our proposition to agents.
William S. Jones
112 N. Broad Street Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers
We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.
AUTO DIRECTORIES CO., 108 Fulton St., New York City

Diamond Chains
Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.
DIAMOND CHAIN & MFG. CO., Indianapolis

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 79
Adams Company 66
Adland Motor Co. 80
Allyne Brass Mfg. Co. 75
American Ball Bearing Co. 69
American Battery Co. 78
American Coil Co. 84
Apperson Bros. 76
Astor Company 77
Atwater-Kent Co. 82
Auto Brass & Aluminum Co. 79
Auto Directories Co. 84
Automobile Equipment Co. 78
Badger Brass Mfg. Co. 67
Baker Motor Vehicle Co. 59
Baldwin Chain & Mfg. Co. 76
Ball-Fintze Co. 76
Bartholomew Co. 76
Beaver Mfg. Co. 65
Bersbach, Alfred 80
Billings & Spencer 82
Bloomstrom Motor Co. 43
Boston Auto Gage Co. 77
Boswer, S. F. & Co. 79
Briscoe Mfg. Co. 61
Brown, S. N. & Co 73
Brown, W. H. 77
Buckeye Mfg. Co. 66
Byrne-Kingston Co. 54
Cadillac Co. of Ill. 80
Cadillac Motor Car Co. 51
Canedy, Earl 81
Carr, F. S. 68
Champion, Albert Co. 77
Coey, C. A. & Co. 81
Columbia Lubricants Co. 74
Continental Caoutchouc Co. 55
Continental Engine Co. 73
Continental Motor & Mfg Co. 81
Coops, C. W. Co. 79
Corbin Motor Vehicle Co. 45
Corwin Mfg. Co. 65
Cramp, Wm & Sons Ship & Engine Building Co. 13
Cullman Wheel Co. 78
Dayton Electric Mfg. Co. 72
Dayton Motor Car Co. 63
Diamond Chain & Mfg. Co. 84
Diamond Rubber Co. 82
Dixon, Jos. Crucible Co. 78
Dyke, A. L. Auto Supply Co. 77
E. H. V. Co. 58
Eclipse Buggy Co. 79
Edmunds & Jones Mfg. Co. 42
Eldredge Electric Mfg. Co. 78
Electric Storage Battery Co. 41
Electric Vehicle Co. 68
Elmore Mfg. Co. 72
Excelsior Supply Co. 40-80
Fairmount Engineering Wks. 80
Fast Machine & Tool Co. 79
Firestone Tire & Rubber Co. 56
Ford Motor Co. ..... Cover
Franklin, H. H. Mfg. Co. 35
G. & J. Tire Co. 62
Gabriel Horn Mfg. Co. 79
Garford Mfg. Co. 71
Gilbert Mfg. Co. 76
Githens Bros. 80
Goodrich, B. F. Co. 60
Goodyear Tire & Rubber Co. 83
Gray-Hawley Mfg. Co. 70
Ham, C. T. Mfg. Co. 81
Hardy, R. E. Co. 78
Hartford Rubber Works 52
Hartford Suspension Co. 79
Haynes Automobile Co. 61
Herz & Co. 78-82
Hine-Watt Mfg. Co. 75
Hoefeller Brass Foundry Co. 79
Hoffheimer Soap Co. 71
Holley Bros. 80
Hussey Drop Forge & Mfg Co. 82
Hyatt Roller Bearing Co. 84
Imperial Brass Mfg. Co. 75
Imperial Wheel Co. 63
Importers Co. 80
Jackson Automobile Co. 62
Jeffery, T. B. & Co. ..... Cover
Kilgore Air Auto Cushion Co. 67
Kimball, C. P. & Co. 78
Knox Automobile Co. 70
Kokomo Rubber Co. 67
Leather Tire Goods Co. 78
Lester, E. F. 78
Link Belt Machinery Co. 54
Lloyd Iron Roofing & Paint Co. 71
Lobee Pump Co. 79
Locomobile Co. of America 65
Lottis Bros. Co. 46
Logan Construction Co. 83
London Auto Supply Co. 74
Long Mfg. Co. 64
McCord Co. 79
McDuffee Automobile Co. 80
Madison-Kipp Lubricator Co. 82
Marion Fluid Co. 81
Matheson Motor Car Co. 66
Maxwell-Briscoe Co. 55
Mead Motor Co. 80
Mezgar, C. A. 70-75
Michelin Tire, Amer. Branch. 57
Miller, Charles E. 72
Miller Signal Co. 79
Milwaukee Steel Foundry Co. 78
Mitchell Motor Car Co. 41
Moline Automobile Co. 72
Monon Route 83
Morgan & Wright ..... Cover
Mosler, A. R. & Co. 76
Motor Age 80
Motor Car Specialty Co. 84
Motor Car Supply Co. 79
Motz Clincher Tire & Rubber Co. 75
Mutty, I. J. Co. 79
National Motor Vehicle Co. 48
National Spring & Wire Co. 79
Never-Miss Spark Plug Co. 81
Newmastic Tire Co. 77
N. Y. & N. J. Lubricant Co. 79
Nordyke & Marmon Co. 38
Nyberg Automobile Co. 83
Olds Motor Works 36-37
Oliver Mfg. Co. 78
Oliver Typewriter Co. 77
Packard Electric Co. 81
Packard Motor Car Co. ..... Cover
Pantasota Co. 68
Pardee & Ullmann 81
Pederson, J. D. 76
Pennsylvania Rubber Co. 59
Peerless Motor Car Co. 49
Pierce, Geo. N. Co. ..... Cover
Pittsburg Reduction Co. 79
Pope Mfg. Co. 53
Premier Motor Mfg. Co. 64
Prest-O-Lite Co. 65
Quaker City Automobile Co. 80
Railway Appliance Co. 79
Rainier Co. 34
Robert Instrument Co. 78
Rose Mfg. Co. 73
Royal Battery Co. 68
Royal Battery Co. 68
Royal Motor Car Co. 72
Rubay, Leon 75
Rubber Goods Repair Co. 80
Rushmore Dynamo Works 57
St. Louis Motor Car Co. 78
Shawver Co. 75
Skinner & Skinner 78
Spicer Universal Joint Mfg. Co. 78
Springfield Metal Body Co. 79
Standard Roller Bearing Co. 79
Stanley, John T. 70
Steel Ball Co. 69
Stevens, J. Arms & Tool Co. 39
Stolp Mfg. Co. 73
Streit, A. Machine Co. 75
Supplementary Spiral Spring Co. 77
Synnesvedt Machine Co. 74
Syracuse Aluminum & Bronze Co. 77
Temple, Ralph 80
Thomas, E. R. Motor Co. 47
Thompson, Chas. A. Co. 78
Trebert Gas Engine Co. 81
United States Automobile Co 50
U. S. Jack Co. 79
Veeder Mfg. Co. 74
Vesta Accumulator Co. 75
Wabash Railway Co. 79
Walworth Mfg. Co. 84
Warner Instrument Co. 67-74
Way Muffler Co. 44
Wayne Automobile Co. 51
Weber, O. F. & Co. 80
Weed Chain Tire Grip Co. 73
Welch Motor Car Co. 82
Western Tool Works 66
Western Electric Instrument Co. 76
Wheeler, F. H. 60
White Sewing Machine Co. 61
Whitlock Coil Pipe Co. 71
Whitney Mfg. Co. 69
Willard Storage Battery Co. 72
Willis, E. J. Co. 77
Winkley Co. 74
Winton Motor Carriage Co. 33
Witherbee Igniter Co. 76
Wolverine Automobile and Commercial Vehicle Co. 52
Worthington Automobile Co 54

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

MOTOR AGE

VOL. VIII NO. 20 CHICAGO, NOVEMBER 16, 1905 $2.00 Per Year

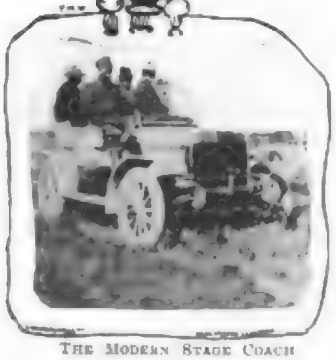
NEW MEXICO'S AUTOMOBILE STAGE COACH

A WESTERN SCENE—ROUND-UP OF A HERD OF HORSES

IF IT IS an ideal automobile ride the traveler wants, he will do well to take the trip offered by the Roswell Automobile Co. on its automobile stage from Roswell to Torrance, N. M. If it is scenery he wants, he will do well to stay at home, unless he will be satisfied with a typical picture of the plains, its inhabitants, both human and animal, and the pursuits of the people there encountered. But after making this trip, the traveler is impressed above and beyond all anticipations with automobiling in its ideal state, as exemplified on this run, and the absence of the natural scenery of a rugged country is forgotten on this trip.

Starting from Roswell, which is on the line of the Santa Fe railroad, at 10 o'clock in the morning, the cars of this company are soon on the main road that runs north for 21 miles to Eden Valley, which, more like a settlement than a village, is the only place on the entire run that has the semblance of a station or stopping place. There is a highway, or a wagon road, to Eden Valley, but the automobile company is not satisfied with the rutty track made by ordinary travel, and has constructed a road, thus not only avoiding the ruts of the wagon track, but making a clear right-of-way for its swift-moving cars. Out of Eden Valley the route takes directly to the northwest, and for 90 miles sends over a smooth trail across the plains, without a stream, ditch or even a stone to cause an interruption in the run, or in the scenery. Just before rounding into Torrance a few ranges of low, ragged looking foothills, covered with scrubby pines, are passed, and all during the journey, from Roswell to Torrance, the Capitan mountains are plainly visible, from 40 to 70 miles away; but the plains are so much in evidence that the distant mountains are barely remembered after the long ride is ended. In a word, the 111 miles from Roswell to Torrance might be described as consisting of fifty low, far-stretching hills, each one of which, when surmounted, discloses another identical in appearance to itself.

But there are some things of interest on this trip, outside of the superb automobiling it affords. The cattle industry of the southwest is shown in its various phases and the lazy but patient Mexican herder with his sheep is seen at intervals. Then there are



THE MODERN STAGE COACH

A STOP FOR REPAIRS

Digitized by Google

wild animals. On one trip recently the writer saw two herds of antelope, three lone wolves, a number of coyotes, a badger, white eagles, bald eagles and hawks, to say nothing of quail, plover, prairie chickens and prairie dogs innumerable. The antelope and wolves made the most interesting sights. Their interest in the flying automobile added to the opportunity of seeing them, for invariably they would stand for minutes in the same spot, sometimes not more than 100 yards away, and with wide-open eyes, watch the strange machine that had come to invade their territory. After passing all these scenes and riding over 111 miles of country, and stopping possibly a half-dozen times to replenish the water tank or adjust the machinery, the traveler reaches Torrance, and he has spent from 5 to 8 hours, according to circumstances. Whether he be an old automobilist or on his initial ride, they will be among the most pleasant hours of his life. But sometimes the circumstances are not as favorable as they might be. Sometimes there is a puncture, a blow-out, a hot-box, or a break in the machinery. That means

AN ANTELOPE IS NOT AN UNCOMMON SIGHT

a rest out on the open prairie of from 30 minutes to 3 hours, and if the start has been late, it may mean that the run will be completed after night, which will be too cold for comfort at fall seasons in that high altitude.

Organized 8 months ago, the Roswell Automobile Co. has had its three cars plying its one route for 7 months and in that time has satisfied itself that automobiling in the plains country of the southwest is far more pleasant and equally as much more profitable than the old-time stage coach. Officered by L. K. McGaffey president; R. E. Baughman secretary; E. A. Cahoon treasurer, and J. W. Stockard manager, the company has the best business men of Roswell at its back. Soon after the proposition was presented to the people, the necessary funds were forthcoming. In 1 month the machines were ordered and delivered and a track had been built over nature's roadbed to Torrance. The construction of the roadbed was a simple piece of work, made so by the ingenuity of Manager Stockard, who has safely surmounted every obstruction that has thus far come before the enterprise. At first he constructed a drag which consisted of two beams, fastened together at a distance apart equal to the gear of the automobile stage. These were armed with knives on their front ends and when this apparatus was dragged over the road, a track 8 inches wide for each wheel was cut out of the raw prairie. Later the drag was armed with a miniature snow plow on each of the beams and when the machine was dragged over the road again, it had cut out parallel tracks 30 inches wide that look like troughs in the face of the prairie. These troughs make the track for the automobile. While they cannot be seen sometimes 15 feet from the side of the machine, from the end of the car, or from the seats thereof, they can be followed for 1, 2, 5 and sometimes 9 miles, off across the plains and finally running up the hil that is invariably to be seen in the distance. For there is always a hill in every direction on the horizon on the plains of the southwest, and the traveler is apparently always in a low flat, bordered by low hills.

Generally speaking, the ground over which the Roswell-Torrance route passes is composed of gravel, sand and soft earth. Any one of these three materials makes a good road, or any of their compounds makes a better. But there are exceptions to the general rule in the shape of short stretches of gypsum, better known as gyp, and when a stretch of this mineral is found the road is bound to be a little rough. The gyp powders and blows away, leaving holes that give the motor car an unpleasant jolt. But far greater as a source of annoyance than any other thing on the route is the prairie dog. His villages are to be seen at intervals all along the route. In places the automobile track runs through one of his principal streets. He resents this intrusion and shows his displeasure by digging a house in the center of one of the tracks. That means that there will be a bump from 3 to 8 inches high right in the way of the car, and the machine must be slowed down to its minimum speed in passing the obstruction. All the dog holes can be filled

LOVERS' LANE, NEAR ROSWELL, N. M.

THE MAIN STREET OF ROSWELL, N. M., PRESENTS A BUSY APPEARANCE AT ALL TIMES

Digitized by Google

THE ROAD IS HIDDEN BY BUNCH GRASS

one day and there will be as many, or more, the next. Before long all the prairie dogs on the route will have to be poisoned.

The equipment of the Roswell Automobile Co. consists of three cars, a 1903 Winton and 1905 Winton and Cadillac. The Wintons each carry four passengers and the driver and the Cadillac carries three. The trips to Torrance are made three times each week, one machine making the round trip in 2 days. It is seldom that a machine runs light, and the fare is $10 each way—$20 for the round trip. Last week an inspector for the United States postoffice department took the Roswell-Torrance motor car trip for the purpose of seeing if the route is practical for carrying the mails. He was accompanied by Postmaster R. H. Kellahin, of Roswell, and the report of the postmaster is that it is practically assured that the mail contract will be awarded to the company. This will shorten the time of sending letters from Roswell to Albuquerque, Santa Fe and the other large towns of the territory at least 2 days. This will also add materially to the receipts of the company and will mean that two more cars will be added to the service and that trips will be made each way daily between the terminal points.

Several strong points have combined to make the motor stage between Roswell and Torrance a success. The natural condition of the country has made an almost perfect roadbed and the condition of the ground itself makes a magnificent track. Roswell is the largest town of the Pecos valley, the largest and most productive farming district of the entire southwest. It has one railroad, a branch of the Santa Fe, that runs from Kansas City southwest to Roswell. By a series of connections El Paso, Tex., may be reached on the south, and thus the main lines of the Santa Fe and Rock Island may be reached, and by these the town of Santa Fe, or Albuquerque, and the rest of the mountainous portion of the territory. By following the Santa Fe branch northeast from Roswell to Amarillo, Tex., then going to Trinidad, Col., on the Colorado Southern, and from Trinidad taking the Santa Fe, a traveler can finally reach the central portion of the territory by rail. He has then traveled 1,000 miles, gotten up at all hours of the night and consumed about 3 days of time. Railroad fare exceeding that of the motor stage is enlarged by hotel bills and Pullman fees. By the motor route Torrance can be reached in 6 to 8 hours and from there to the large towns is a short run via the Santa Fe Central, a little branch road independent of the larger systems of the territory. Since the starting of the stage, Torrance has become an important point on the map for traveling salesmen, travelers and politicians. That is "the place to take the automobile."

Thus the passenger business of the motor route is assured, and at good prices, too. When the mail contract is secured the route will be one of New Mexico's many gold mines. A freighting business is a later possibility, but is not yet discussed.

The receipts of the route are not net gain by any means, however. The hire of chauffeurs and the repairs on the machines are the greatest expense encountered. The repairs chiefly are put on the tires, which do not wear well in that country, for some reason. It is the experience of the company that 600 miles is a good run for a tire without a break. New tires are continually being put in use and this expense, together with the smaller breaks, makes quite an item in offsetting the net gains. The gasoline account is not as large as might be anticipated. Eleven or 12 gallons are consumed on each trip by the large Wintons and 8 or 9 will run the Cadillac.

After all has been said, the writer is impressed with the splendid opportunity the route affords for scorching. In the first 22 miles out of Roswell two small creeks are passed. They are soon to be bridged but even now they are crossed without difficulty. But after these two small streams are crossed there yet remains 90 miles of the route that is unbroken by steep hill, ditch or stone. In places where the track runs straight as a die for several miles the Wintons are put to a speed of 40 and 50 miles an hour, and it is then that the inexperienced passenger cries "Hold! Enough!" Those in the big cities of the east who are afraid to let out a notch or two on tempting stretches of boulevard can well imagine the sensations on this wild bit of road, with no policeman in sight to wave a warning finger and where a speed ordinance is unknown.

A SAMPLE OF PRAIRIE ROAD

GREAT FIELDS OF ALFALFA AND IMMENSE HERDS OF FATTED CATTLE ARE NUMEROUS AROUND ROSWELL, N. M.

Digitized by Google

PUSH THE UNWIN CASE

Both Parties in Test of Constitutionality of New Jersey Law Hope For Early Decision

New York, Oct. 11—The Unwin test case, which is being pushed in New Jersey by the N. A. A. M., to determine the constitutionality of the license provision of the automobile law, is progressing rapidly. There is every chance that before the close of the year a decision will be handed down by the court of common pleas of Hudson county, to which an appeal was taken from the justice's court. Charles Thaddeus Terry, counsel for the N. A. A. M., and Assistant Attorney General Duffield, on behalf of the attorney general's office, have made their verbal arguments and will submit briefs. Each will reply to the other and then it will be up to the court to render a decision.

Thomas N. McCarter, the attorney general, himself an enthusiastic motorist, is much interested in having the question decided and has promised on his part to carry the case up to the court of errors and appeals and from there to the United States supreme court for a final decision, which shall be binding in all the states.

Professor Terry's foundation contentions that the law is unconstitutional are based on the following reasons: first, because it imposes a double tax on an automobile considered as personal property; second, because it imposes a tax upon the property of a non-resident; and, third, because it discriminates between different users of the highways.

In a talk with MOTOR AGE today Professor Terry stated his foundation contentions, as above quoted, and elaborated on them to a considerable extent.

"This tax," said he, "is not a license fee, for it taxes the car, and a license is never granted to anything but an individual. Since anyone may run the machine after a license has been granted to it, it is a misnomer to call it a license. Further than this, a license is never granted, except when the licensee is to make money from his license. It is, therefore, a tax and a double tax at that; for as each successive owner of the car must take out a new license, the car may be taxed fifty times. I prefer to reserve for my brief in reply to Mr. Duffield's any extended discussion of my contention that the law is unconstitutional because it imposes a tax on the property of a non-resident. As to the question of discrimination against the motor car, the courts have said repeatedly that there shall be no discrimination among members of the same class. An automobile can only be placed in a separate class on the theory that it is capable of greater speed and the motive power is not a horse or a man's muscle. Police power must be exercised within the limits of protection to the public and reasonable requirements to that end are demanded.

"If there is anything to this police power argument all there is to it is that a license is required for identification in case there be a crime committed. If the law said that no one should use the car except the owner such a law might come within the police power, but as it is a million men may use the car, so that identification is not assured.

"My opponent says that the automobile is a peculiar class of vehicle and that so long as all automobilists are brought under it, it is constitutional. The licensee may lend his car to his second cousin and all his second cousin's friends and so may not know who has used it. If the law had said the car could only be used by the owner or his agent, then it might be different, but it does not. In all the cases quoted by my opponent—known as the inn and ferry cases—the licenses were taken out for a profit making business.

"This taxing of a non-resident's property, as comprehended by the present law, is not upheld by any court. It is ridiculous that a man should have to take out a license from each of eight or ten states for a journey through them. The courts have universally held that no line of property in a state temporarily or brought into the state for purposes of transit can be taxed."

TOO BUSY TO MAKE CARS

Toledo, O., Nov. 13—The Consolidated Mfg. Co., which has been manufacturing the Yale automobile under the name of the Kirk Mfg. Co., has decided to discontinue that branch of the business. Negotiations with a number of concerns are now pending for the continuation of the manufacture of the new Yale touring car, and it is expected that a deal will be closed within a short time. The Consolidated concern was formed 3 years ago, and took over the business of a number of Toledo's important manufacturing businesses, among them being the Yale and Snell bicycle plants, the Kirk automobile plant and other lines. The company will continue to manufacture the Yale and Snell bicycles, Yale-California motor cycles, drop forgings, brazed tubing, sheet metal, stove trimmings, fittings of various kinds, etc. As the company asserts it is doing a mammoth business in all these lines, which now require more attention than heretofore, and inasmuch as the automobile department could not be given the attention it needed, and as it was the last to be added to the long list of departments of the big plant, the Consolidated people have decided to leave the field of automobile making altogether.

HOPE FOR DECISION SOON

New York, Nov. 14—Those who are interested in the outcome of the Selden patent suit may expect a decision from the lower court within the next couple of months. As the case now stands there are but two more witnesses in rebuttal to be examined by the plaintiff's lawyers. The examination will take about 6 weeks, when the court will take the case under advisement. It is expected that the court will render a decision within a few weeks after the case is closed. Those interested in the suit profess to believe that a favorable decision will be rendered and that there is little likelihood of an appeal being taken. On the other hand, those in the know say the case will go to the United State supreme court before a final decision is reached and the case brought to a close.

MOVES IN WINDY CITY

Several Agencies Switch and New Branches Are Opened On Chicago's Automobile Row

Chicago, Nov. 13—The Chicago automobile row is undergoing its annual changes rather early for next season. A change has been made in the Maxwell representation, the Holmes-Schmidt people taking it on with the Glide and Welch.

It was announced late last week that the Pardee-Ullman Co. had signed a contract with Sales Manager Benjamin to handle the Franklin, which was formerly represented by Ralph Temple, who now has almost a complete new line. The Pardee-Ullman concern will continue to handle the Packard, the Franklin filling in the vacancy left when the White company decided to open a branch in Chicago.

One more new deal was announced Tuesday, when Ralph Temple took over the agency for the National, formerly handled by the Hayden Automobile Co. This gives Temple four strings to his bow—the Panhard, which he imports direct from France; the Reo, the Premier and National.

Another new manager to report was none other than Webb Jay, who has so far recovered from the injuries received in the Buffalo accident, when he ran into the fence during a race, as to be able to assume the management of the new White branch which has been opened in this city. Jay will at once set to work looking for a location.

The Bennett-Bird Co., formerly representing the Premier and Cleveland, has materially altered its plans, having closed to represent the Corbin and the Dolson. This leaves the Cleveland without a footing, but several are now bidding for the agency, it is reported. The Bennett-Bird Co. plans to enlarge for the coming season and expects to move some place in the same block where it can get 50 feet frontage. The Buick agency, at 1412 Michigan avenue, in charge of W. J. Meade and next door to Bennett-Bird, is also thinking of moving, although having nothing definite in sight so far.

This moving end of the game is particularly prominent just now, and in consequence the block from Fourteenth to Fifteenth streets on Michigan avenue resemble a series of fortifications. The old Hankins mansion, at 1440-2, on which the old gambler is reported to have spent $135,000, is being dismantled and on the same site will go up a modern two-story building which will be occupied by the Ford branch, in charge of Thomas Hay. A few doors north another old building is being torn down and in its place will be the big structure to be occupied by the Excelsior Supply Co., which intends getting on the row. At 1424 the workmen are busy on the place where C. A. Coey will hold forth with the Thomas in a building which Coey aims to be second to none in the automobile game when it is completed. On the other side of the street the building activity is confined to the new structure to be occupied by the McDuffee Automobile Co. soon after the first of the year. It will occupy three numbers, 1501-3-5.

Digitized by Google

The McDuffee company has also opened a branch in Milwaukee, which is in charge of W. F. Discher. H. C. Tillotson and H. G. Moore, the latter formerly with the Rambler people, will be associated with McDuffee here and will sell the Stoddard-Dayton and the Royal. As soon as McDuffee moves out his old store will be occupied by the Kelley-Hunter Co., which is now on the second floor. This latter concern is new in the game and represents the Northern line in this section.

One other is also talking move—the Greer Automobile Co. It says it needs larger quarters and may change locations about May 1, although it is more possible that it will stay where it is and open a garage on Indiana avenue, from which it will run its renting business. Just what line Greer will carry is not yet definitely known. He is thinking of changing, but will probably keep the Michigan line, which will also include a commercial rig the coming year.

J. H. Toole, who has heretofore represented only the Orient buckboard at 433 Wabash avenue, has signed to also carry the full Orient line at the same place. The Autocar agency has not been changed and Geyler &Levy will continue to push the sale in a retail way in this section.

Several changes have taken place in the managership of branches and the personnel of the various staffs. A. J. Banta has assumed charge of the Locomobile branch, while Thomas Hay is running the Ford place. L. J. Ollier has become sales manager for Ralph Temple, and Fred Brand has succeeded Jack Fry at the Apperson place. The Pardee-Ullman Co. has added J. Baylies to its staff to look after Franklin interests, while Van Alstyne is in charge of the branch just opened by the St. Louis makers at 1229 Michigan avenue.

M. J. Budlong, president of the Electric Vehicle Co., came on to Chicago last Monday for the purpose of installing as manager of the Chicago branch of the company W. H. Durphy to succeed Frank J. Fanning. Durphy only recently allied himself with the Columbia people, having formerly managed the Boston branch of the Decauville company.

A fire in the building occupied by the Acme and Ford branches and Dan B. Southard stirred up the row last Thursday. The fire at one time threatened to be dangerous, but it was eventually put out with bdt slight damage.

PAGE BANQUETED

New York, Nov. 11—Carl H. Page, manager of the White Sewing Machine Co.'s branch in this city, accompanied by his mother, sailed for Europe today for a vacation of 6 weeks. He will be met on the other side by Walter White and the trio will make a tour of Italy, Southern France and the Mediterranean, in addition to attending the Paris Salon. By way of an au revoir Conrad N. Pitcher gave Mr. Page a surprise dinner in the yacht room of the Hotel Astor last evening, at which twenty-four guests sat down. There were music, songs and speeches between courses. Windsor T. White paid a high tribute to the guest of honor personally and as a business man.

TRIP ONE-THIRD OVER

Percy Megargel Reaches Portland, Ore., After Strenuous Trip in the Reo Mountaineer

Portland, Ore., Nov. 10—The hardest part of the trip of the Reo Mountaineer on its trip west across the continent was completed when it rolled into town here Thursday night. It had been a strenuous journey, not anything remarkable from a record standpoint, for that was not the object when we left New York August 19, but it has demonstrated thoroughly the possibilities of the automobile and has resulted in the gathering of piles of useful road data for the American Motor League. Our adventures have been many and varied, but we have pulled through all of them and feel none the worse for our experience. If anything it has paid us in the way of rugged health. We shall rest here a few days before picking up the thread of our journey.

Under the shadows of Mount Hood, the highest peak of the Cascade range, with 60 miles of villainous roads to traverse before entering Portland, the Reo Mountaineer pulled into Wapinitia late Sunday after having spent 24 hours in the Indian country. Saturday night Fassett and myself spread our blankets in the hayloft of an Indian's farm near Warm Springs, in the Indian reservation of that name. Incidentally we cooked our breakfast, dinner and supper in Indian country and lucky were we to have provided ourselves with grub, for nothing could we get in the eating line from the Indians.

The hills we have encountered the past week are far steeper than anything I have ever tackled in all my 17,000 miles touring by automobile and Saturday I struck for the first time a hill that the Reo refused to mount with its 1,100 pounds of live and dead baggage. The little Yankee gradometer said 40 per cent and then refused to register further, yet the car struggled gallantly toward the top until we struck a lot of loose stones, then she quit. It was a trail that we had been informed was impassable and had not been used for years, yet it was a choice of taking the grade or fording a 3-foot-deep creek and incidentally running several hundred yards up stream.

While the Mountaineer ran a quarter of a mile up the aforementioned hill in a few minutes, it took us nearly 2 hours to get it down, for we did not dare to dig out the sprags, which were buried deep down into the roadbed, fearing to lose our car. As a last resort we hauled out our cable and made it fast to a boulder weighing some 500 pounds and with this dragging after it the car was slowly backed down to the creek at the bottom, which we forded next morning in safety without even experiencing spark trouble.

Huge stones, stumps—standing in many cases 18 inches from the ground—fallen logs and deep washouts had to be weathered repeatedly Sunday and our log book shows a mileage for the entire day of only 30 miles. This 30 miles was all hills and it was either a case of run on low speed toward the summit of some high mountain or with switch shut off and all brakes set dash down toward the bottom, not knowing what minute would be our last. On one of these wild dashes we ran into a pile of stones in the middle of the roadbed upon rounding a turn and our muffler was carried away. The usual quiet Reo now resembles Dan Wurgis' famous Reo Bird, its exhaust being audible for a half a mile or even further. In fact, the reports from the double-opposed motors were so loud Sunday afternoon that Fassett fired three times at a coyote before the animal heard the report of the gun and turned to run away, he being so amazed at the sound of the motor that he stood looking at the automobile less than 100 yards distant. No, Fassett didn't hit him.

At Madras, Ore., we found the automobile sheds of the Auto Transportation Co., which operate several cars between Madras, Prineville and Bend. Here we were able to secure gasoline at a nominal figure and also get some valuable information on the roads from Donald Ray, the company's superintendent, a young college man who is making his mark in the west. The Reo Mountaineer is the first automobile that ever tackled the road through the Warm Springs agency. We were informed by several that it was impossible for an automobile with 8 inches clearance to negotiate the roads through the agency, but after coming across the Rocky and Blue mountains we did not consider anything impossible, nor did we find it so, although we had to use great caution in dodging the high rocks.

The top price was paid for gasoline at Burns, Ore., where we paid $12 for 15 gallons. We had to have it and the merchant knew it and soaked us accordingly, although I have since been informed that he charges everyone that same price. From here we will go south to Los Angeles and then follow the Santa Fe route across Arizona and New Mexico if such a thing is possible.—PERCY F. MEGARGEL.

A. L. A. M. ENGINEERS MEET

Hartford, Conn., Nov. 13—The engineers of the mechanical branch of the Association of Licensed Automobile Manufacturers met on Thursday in Hartford where a conference on metallurgy was in progress in the laboratory of Henry Souther, who is in charge of this branch of the service supplied to the mechanical branch. A visit to the factories of the Pope Mfg. Co., where Pope-Hartford automobiles are made, and the Electric Vehicle Co. was a part of the day's program. The principal business of the day was a discussion as to steel and the movement for a higher quality of steel was general. The quality of steel that has been furnished to American manufacturers has contained too high a percentage of both sulphur and phosphorus, both of which are negative quantities to be avoided. The amount of carbon, manganese, silicon and nickel, too, play important parts and Mr. Souther has been giving much of his attention to the refinements of steels which will have the greatest efficiency. The question of steel naturally led to discussions of crankshafts, wheel pivots, axles and gear house shafting.

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office
American Publication
Bureau 55 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the Trade Press Co. N. H. Van Sicklen Manager. Telephone Harrison 4410

Member National Association of Automobile Manufacturers. Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year. Foreign subscription four dollars
The Western News Co. of Chicago and its branches supply newsdealers. Entered at the Chicago postoffice as second class matter

FLEXIBLE MOTORS

WHEN a British motor car manufacturer drove a new six-cylinder car 50 miles on high gear, the British motoring public was set to wondering and discussing the feat, for such it really was, considering the condition of the roads and other unfavorable things. Now the discussion has been so prolonged as to raise the question whether it is not possible to practically do away with change speed gears entirely and depend almost wholly upon the flexibility of the motor for speed governing of the car upon the highways.

It is pointed out that many manufacturers making cars fitted with four speed changes have suddenly taken to advertising the fact that they have motors of great flexibility, indicating that their own cars are capable of being driven long distances without change of gear from the high, and the fact that these concerns have so advertised their wares is pointed out as meaning that they can make flexible motors even of the four-cylinder pattern and that at no distant date the cars may be minus the three and four speed change gears if flexibility of motor is further developed.

This is the argument in favor of six and eight-cylinder motors, but at least one American maker has persistently clung to the manufacture of a car with four cylinders to the motor and with but two changes of speeds in the gear box.

To do away with the multiplicity of speed change gears would doubtless eliminate much complicated mechanism so far as the speed change portion of the transmission is concerned, but at the same time it would add complications if six and eight-cylinder motors were to come into general use in a desire to obtain flexibility of power. If it is possible for one maker to design a motor with such flexibility as to do away with all save two speed change gears, it is possible for others to do likewise; and this must be the result in time.

It must, however, be remembered that there is a difference in English and American roads, and while a motor car might be driven for 500 miles without change of gear in England, it would be almost impossible to find 500 miles of roads in America that would permit of such a feat, unless boulevards were depended upon for such a test. Still, the one American make bobs up at all stages of the argument.

It can safely be argued it is not often that great difficulty is encountered in the matter of cylinders, and that there would be little more trouble with six than with four; that it is as easy to take care of a half dozen connecting rods and pistons and commutator parts as two-thirds that number, and that when one cylinder happened out of commission there would be a sufficient number left to do the work on ordinary occasions.

The little controversy which is interesting both English motorists and makers will reach this country before another season passes, and it is safe to say the number of American makers putting out six-cylinder motors, while small today, will be increased at least several fold. Furthermore, it is not beyond an impossibility that ere a very few years have passed the whole transmission scheme will have been so altered as to do away with speed changes entirely, particularly on cars which are of sufficient size to permit them being fitted with motors having not to exceed four cylinders, with which most of the large cars are fitted today. It is a subject which will withstand study and experiment for the next few years.

SMALL CARS ABROAD

THERE appears to be a tendency on the part of the motor car manufacturers in continental Europe to appreciate the fact that the buying public does not consist entirely of those people who desire or who can afford to purchase multiple cylinder cars of high power. This is shown by the fact that at the forthcoming Paris salon there will be shown, according to reports, a large number of small and popular priced cars, including runabouts and light touring cars such as have been in vogue in America for 3 or 4 years and which proved the beginning of the motor car industry in this country.

Small cars have been made in European countries but not to any extended degree, the demand having been so great for large cars that manufacturers naturally were disinclined to dabble in the making of cheaper and smaller vehicles when they had all they could do to supply the demand for those of larger size and of greater price. Some weeks ago it was thought possible there would be an immense number of popular priced cars exhibited at the forthcoming show in Paris. At the present writing this enthusiasm, which possibly only existed on paper, has dwindled to some extent, but it is evident that some of the makers of the most prominent cars on the market today are anticipating the desire of the middle class to purchase machines and enjoy country life in automobiles, the same as those of the wealthier class are enabled to do.

It is announced that such concerns as Renault and Peugeot have designed and are making small cars which will be exhibited at the show and which will be constructed in large quantities with a view to supplying a big demand for the middle classes on the continent. Small cars have been extremely popular in England, where good roads abound, and they would prove likewise popular in France if sold for a reasonable price. It is true there have been small cars made on French soil, but they have not been of the class desired and have usually been noisy affairs at best. They have in no manner compared with the small English cars or the small cars manufactured in this country, so far as price and running qualities are concerned. They may have been better from a mechanical point of view, but it is not always the mechanically perfect machine that proves the most popular and does the most work.

In America the tendency at present is rather to get away from the small car, which is shown by the fact that the makers here are today building larger cars and more powerful motors than at any time since automobiles were first put into use in this country. The small car, however, is by no means obsolete and probably never will be. There is a field abroad for small cars and the field is growing.

The American roads are partially responsible for the change of feeling among those who might be satisfied with light powered cars if they could do the work at all times and in all conditions, but the man who desires to go where he pleases and when he pleases must naturally have sufficient power to take him over America's frightful highways. It is different in the case of the Englishman or the Frenchman, for in both France and England there are few roads over which a very light powered car cannot be run at a satisfactory speed.

The fact that the French makers are turning their attention toward the construction of smaller cars would indicate that the general masses of people are yet to be interested in the automobile; that those who have so far taken it up have been those who are inclined to accept anything that is new, chiefly from the standpoint of the faddist. This is not so much indicated in this country as abroad, for in this country there have been machines on the market at any and all prices and the prospective purchaser had but to indicate his limit in order to be possessed of a car.

The foreign prospective purchaser with a small amount of money at hand was not so fortunate if he desired to be loyal and purchase a home made machine. He was compelled to buy a high priced, heavily-powered car or go without, for the supply of small cars was by no means equal to the demand for them.

The movement on the part of French makers to begin the manufacture of small cars is wholesome in the extreme and speaks for the motor car trade a long term of prosperity in the immediate future.

Digitized by Google

Many a man can thank election day for giving him his first ride in an automobile.

It is strange that no manufacturer has so far thought to equip his new models with some sort of music-producing apparatus.

Some street car companies are seriously thinking of compelling each passenger to take a dose of anti-freezing compound as he or she hands a nickel to the conductor.

If motoring keeps on increasing its popularity with the people and if only some one can be found to look after the stray cats, dogs and canary birds the Humane Society can go out of business. The horses won't need it.

If Percy Megargel doesn't learn anything about automobiles on his transcontinental trip he ought to return home with a pretty generous fund of knowledge on cow punchers, bronchos, coyotes, snakes, bad roads and other disagreeable things.

The British motorist is pestered by police traps, the same as the motorists in New England, Chicago, and other parts of the United States, but so far advices have told nothing of the Englishmen bumping the bumps, so they do not know what it is to touch high spots.

Is is estimated that in another 6 weeks all the testimony in the Selden patent suit against Ford and others will have been introduced; then the court will take the case under advisement and will render a decision—within several months. There is of course a possibility that the case will go to a higher court, and this will drag it along for another period of years. In the meantime the public will go on buying automobiles, and will take a chance on the outcome of the patent litigation.

With Kaiser Wilhelm adding automobiles to his stable as fast as the royal treasury will stand the strain, with President Loubet of France and King Alfonso of Spain becoming such pals through their love for the motor car, with the Prince of Wales touring through India and with the rest of the royal bunch showing such a fondness for motoring, our own Theodore R. must find it rather lonesome being left out in the cold with nothing to do besides criticising the football rules and wondering if Teddy, Jr., will make the varsity eleven at Harvard.

Nobody will deny that the A. L. A. M. is gaining ground—it has taken in one new member of late.

Sticking to the cab may be loyalty for the horse on the part of the jehu, but it is like other forms of loyalty, rather hard on the pocketbook.

It may be 40 miles from Schenectady to Troy, as the old song has it, but it is even a longer stretch from the Vanderbilt cup race to the Ormond meet in the estimation of those enthusiasts who like to talk racing.

Chicago is figuring on extending its boulevard system, which may, after all, be of no avail to the automobilist, inasmuch as by the time the work is completed the automobile will have given way to the airship.

One of the troubles that will crop up at the 1906 shows is that the prospective purchaser will find so many "best" automobiles and so many devices with which to fit his rig he will not be able to make a choice and will suffer from cold feet.

Olympia show in London will have 300 exhibitors; great interest being taken in Paris event, demand for space being more than promoters can care for.

Counsel on both sides pushing Unwin case, which is being pressed to test constitutionality of license provision of New Jersey's automobile law.

Consolidated Mfg. Co., of Toledo, abandons manufacture of Yale automobiles because of growth of other branches of its business.

Many changes recorded in Chicago, several leading agencies being transferred, new branches opened and managers changed.

Percy Megargel and Reo Mountaineer arrive safely in Portland, Ore., completing one-third of double transcontinental journey.

Chairman Morrell, of the A. A. A. racing board, given banquet and told what a good fellow he really is.

Sicily cuts into touring game and offers $10,000 and gold shield for touring event for 1906.

New Yorkers fight against embargo prohibiting gasoline cars being driven on steamship docks.

Reports show that England has turned out 13,200 cars and 15,000 motor cycles in last year.

Decision in lower courts in Selden patent suits expected within next couple of months.

Factory to be started in Chicago for manufacture of 1,000 Maxwell cars for 1906.

Ford Motor Co. announces four-cylinder runabout for to list at $400 to $500.

American Automobile Association creates a route and maps committee.

Senator Morgan has let 3 consecutive weeks slip by without discovering a beach suitable for racing purposes.

These late season attacks on motorists on the part of the police can be accounted for on the ground that a cold winter is upon us and coal will soon be needed.

With Sicily offering $10,000 in cash for a touring event it is about time for the Amateur Athletic Union to butt in and endeavor to draw the amateur line in motoring.

The fellow who thinks that by making a carbureter to use kerosene he will put the Standard Oil Co. out of business will find himself mistaken, for John D. will simply do a little regulating that will offset any that may be done by outsiders.

An English motorist has just given a cyclist 5 hours' start in 100 miles and beaten him. Some people can remember 10 years ago when the cyclist could make the motorist look like two dimes, a nickel and five pennies in a race of this kind.

Such utterances as those credited to the Rev. Father P. J. McDonnell, the Chicago priest who advocated before the west park board that "a man would be justified in killing the criminal autoist who would crush out his life" are either anarchistic ravings or intended for advertising.

New York voters certainly demonstrated that all this talking good roads agitators have been keeping up for all these years did not go in one ear and out the other. Fifty millions of dollars judiciously spent on the highways of the empire state ought to give the good motorists a touch of the hereafter.

Last week in Chicago a runaway horse dashed through State street, the crowded retail center of the city, knocking people right and left and colliding with other vehicles. There was no number on the horse or on the wagon, and the police were unable to locate the horse, the driver or the owner. This seems a pretty good opportunity for the automobilists to demand that all vehicles be numbered. Here is a chance for John Farson to start something, now that he is again the presiding officer in the local automobile club.

Google

J. BULL HAS DONE WELL

Report Shows That 13,000 Motor Cars Have Been Manufactured in Great Britain This Year

Washington, D. C., Nov. 11—Some interesting facts concerning the automobile industry in England are just to hand, from which it is learned that a study of the figures relating to the motor car industry shows that the principal works and factories in England have during the past season had their capacities taxed to the utmost; their output has been immense; good prices have been realized, and yet they have not been able to fill the demands of the consumer. From careful inquiries it is estimated that the production this year up to the end of September was nearly 13,200 cars of all grades and sizes, together with about 15,000 motor cycles. Taking the average selling price at the factory as $1,000 per car and $150 per motor cycle, this means that during the 9 months the turnover of the works has been $13,200,000 in cars and $2,250,000 in motor cycles, together over $15,000,000. The total trade, taking middlemen's profits into consideration, must be well over $20,000,000, and this has been achieved in an industry which has yet to see its first decade.

France's automobile press has described Great Britain as a much more valuable market for their manufacturers than the French market itself. During the first 9 months of 1905 there were imported 4,761 motor cars, valued at approximately $10,323,250, and 1,395 motor cycles, valued in round numbers at $208,000—that is to say, Great Britain has only been able to make some 70 per cent of its requirements. In addition there were imported about $3,250,000 worth of parts, so that the total import trade has reached the large amount of approximately $13,781,250, showing that altogether about $33,750,000 worth of automobiles and motor cycles has changed hands in the British market during these few months.

The average price of the imported car was $1,900 in 1904 and $2,165 in 1905. The great advance is in the quality of the product. The British output is largely made up of the smaller and cheaper cars, and it is doubtful whether corresponding figures on the same basis would show an average retail selling price of more than $1,250—$1,500. This means that the foreigner has secured the cream of the trade. Of course, many cars worth double and treble this average are British-made throughout, but the car for the man of moderate means has been the aim of British makers, and the great number turned out must infallibly bring down the average realized price. The light car, as it is termed, has not had so much attention paid to it on the continent, makers' efforts having been concentrated on the larger and more profitable sizes, and it is practically certain that if it were not for the American small-car imports the average import car value would be even much larger than it now stands. The trade is expanding and it would seem that it will continue to expand, and that before long the manufacturer of the small car will occupy just as important a position in the motoring world as his big brother. The profits to be had making the higher powered cars have been tempting, it is true, but on the other hand the masses have to be looked after, and if the cry for a machine within reach of the middle classes is loud enough, which it promises to be, the trade will have to pay heed to it. The coming shows will give a line on this feeling in the United Kingdom, for many new small-car models are promised for these exhibitions. They will also be featured at the Paris salon.

SICILIAN TOURING EVENT

Paris, Nov. 2—Ten thousand dollars in cash and a valuable gold shield, together with the promise of minor works of art, is not a bad start in the automobile world for the small Mediterranean island of Sicily. Chevalier Florio set the ball rolling by offering a Florio targa, or gold shield, for competition in a great touring event to be held on the island at the end of the Wellington boot during next April. M. Figari, another Italian sportsman, immediately came forward with a little gift of $6,000 in cash, which generous act so moved the chevalier that he added to it a sum of $4,000. This $10,000 and gold shield are ready to be won. As first prize there will be $5,000 for the owner of the car and $1,000 for the driver; $1,600 will go to the owner of the second and $400 to the chauffeur; the third car will gain $800 for the owner and $200 for the driver, and fourth and fifth prizes will be $600 and $400, respectively. Regulations have not yet been drawn up, but the event will consist of a tour round the island over varying roads from level and straight to hilly and winding, for two classes of vehicles. The one will be for touring cars, the chassis of which is sold at less than $3,000 and which does not weigh more than 2,200 pounds, and the other for chassis selling from $3,000 to $4,000 and weighing 2,860 pounds. Two passengers will be carried in each car. The start will be made by the drawing of lots. Special precaution will be taken to keep out freak automobiles, and five cars from each construction will be allowed. In addition speed tests over a splendid 3-mile course and a hill-climb over a 5-mile rise will be put on the program for next April.

AUSTIN QUITS WOLSELEY

London, Nov. 4—Henry Austin, who was practically the founder of the Wolseley Motor Car Co. and designer of the Wolseley cars up to a few months ago, has left the Wolseley company and has acquired a factory near Birmingham, from which he proposes to market the Austin car in two types—15-20 horsepower and 25-30 horsepower—thus following the line of others who have had wide experience in the game, by leaving the smaller car to others. There is no doubt that Austin was the first man in British automobilism to produce a car reliable in its construction and moderate in its price. Its engine design was against it of late years, but its reliability was always undoubted. That design, it is said, will not be continued in the Austin, but current design will be adopted by Austin.

SEASON IN SYRACUSE

Dealers and Manufacturers Report Satisfactory Business, All Things Considered

Syracuse, N. Y., Nov. 10—Local automobile dealers and manufacturers are well pleased with the season of 1905, which is now practically over so far as the sale of new cars is concerned. In view of the fact that when the season should have been well under way it was cold and wet until late in the spring, the dealers have had a remarkable trade. The one feature of the business that has been watched carefully is the development of the commercial car, for the dealers believe that along this line in the future will be a great development and that when once the business houses wake up to the situation they will come into the fold. As far as the number of commercial cars sold in this vicinity last summer is concerned, dealers have nothing to pat themselves on the shoulders about, They claim, however, that they have succeeded in awakening the interest of the business men so that several of them have ordered trucks to be delivered early next spring. Six or eight commercial wagons are now in use in this city and are giving the best of satisfaction. The dealers hope to have forty or fifty next year. Probably twenty doctors are now regularly using their machines in their practice and are well satisfied. This is another field in which the automobile men hope to push out next year.

The Amos-Pierce Co. has the largest garage in the city, using the whole building formerly occupied by the J. S. Leggett Co., which is now located in Seneca Falls. C. L. Amos says the season has been excellent, most of his sales being of large touring cars. This firm handles all of the Pope machines, the Oldsmobile and several other well known makes.

"We have had little small-car business this year," said Mr. Amos, "but trade in large cars has proved to be better than we hoped for when we saw how late the season started in. We have several commercial trucks ordered for next spring and shall push the business in that direction as much as possible. The electric business is also growing to be an important factor. During the year we sold an electric patrol to the police department and it has given the best of satisfaction. It was made by the Electric Vehicle Co. of Hartford, Conn.

The Amos-Pierce Co. during the summer did a large business in renting cars, charging from $3 to $5 an hour. On the whole the livery business was profitable.

The Syracuse Motor Car Co., at 118 South State street, is an outgrowth of the business established by W. H. Bissell, who is now manager of the company which has been incorporated. This concern sells the Cadillac and Winton and has a complete repair department, including all the big machines necessary to do any kind of work that is required. This company did all of its business after May 1 and during May and June had the best results, selling a large number

Digitized by Google

of Cadillacs. The company will handle the same lines next year with the addition of a machine to sell for $1,200 to $1,400, for which there is a large demand.

John W. Cronin, who runs the largest horse livery stable in the city, came into the fold this summer and built a garage adjoining his livery stable, taking the agency for the Reo car. Mr. Cronin, although a great lover of horse flesh, made up his mind that he better get into the automobile game as the time would come when his horses would have to take a back seat. He has been joked far and wide for running both a garage and a horse livery, but he stands up well under the pressure.

The R. M. Cornwall Co., which for several years has been in the automobile business, will at the close of this season retire and devote its time to the manufacture of gasoline engines for boats and for farm purposes. The concern is now closing out a considerable stock of automobiles and will have an auction at the close of the season.

William Burns of 612 East Jefferson street, at the beginning of the season erected a garage where a person could store his automobile and take care of it himself, the only charge being for storage. This proved to be a good thing for persons with a small pocketbook and plenty of time, and he had no trouble filling the place. Next year Mr. Burns expects to run an automobile livery and will start in with two machines for rental.

PITTSBURG MAKING NEW ROW

Pittsburg, Pa., Nov. 13—Pittsburg automobile dealers are getting ready for the biggest campaign in their history next year. This is evidenced in two ways. One is the new feature in their business of making a hard campaign on fall and winter sales. This fall the early arrivals of some of the 1906 models have been prolific of much business, and the dealers are already getting in line with advertising that shows that they mean to make a hard pull for steady sales all winter, and the prospects for the success of such a movement are excellent. The other indication of unusual effort among the local firms is found in the way they are spreading out. Two more new garages were arranged for last week. The Hiland Automobile Co., which was organized only a year ago and which handles the Autocar, last week bought a site 100 by 150 feet on Center avenue near the clubhouse, east end, for $15,000 and has commissioned an architect to prepare plans for a two-story brick garage to cost $25,000. The company now has a two-story brick garage on a leased site at Beatty and Baum streets and will sell both the building and the lease as soon as its new building is completed. The structure will be 80 by 125 feet and will be provided with all the latest machinery for repair and vulcanizing work, electric charging, etc. In addition to the Autocar the Hiland company will handle the Buick and the Peerless the coming season.

L. G. Martin, the Oakland automobile dealer, also secured a site for a new garage last week, getting a long lease on a lot in Forbes street near Boquet street.

LOOK FOR A BIG SHOW

Britons Await Opening of Doors of Olymphia Hall—Three Hundred Exhibitors Take Space

London, Nov. 4—Everyone connected with the fourth international motor exhibition of the Society of Motor Manufacturers and Traders, which opens at Olympia hall on the 17th feels that this will be the most brilliant show held in the United Kingdom. It has been demonstrated that the makers are not afraid of showing their new models before the Paris salon and this fact, coupled with King Edward consenting to be a patron of the affair for the first time, promises to make it a success even before the doors are opened. There will be 300 exhibitors at Olympia, fifty-two more than last year, and of this number fifty-one will represent foreign makers. About 135 of the 300 will be car makers, and of this 135 thirty-five of them will exhibit commercial rigs. Thirty-five motor boat makers have space and the remainder will be made up of tire, wheel and accessory makers.

While it is yet 2 weeks from show time some of the exhibitors have let out a few facts about what they propose to have. Through Charles Jarrott & Letts will be shown a modified model of the Oldsmobile runabout, as well as a two-cylinder chassis and vertical engine. S. F. Edge will have a 40-horsepower Napier chassis, a 40-horsepower six-cylinder Napier fitted with a Pullman limousine, a second Pullman limousine with side entrance special fitted tourist body, cape hood and wind screen and an 18-horsepower Napier landaulet on C springs. C. S. Rolls & Co. will feature the Rolls-Royce car that finished second in the tourist trophy race. James & Brown will have nine cars and three patent appliances in the motor car section and also five commercial vehicles. Among the motor cars will be a 20-horsepower four-cylinder touring machine with roi des Belges side entrance body and a 14-16-horsepower four-cylinder double landaulet de luxe for four persons inside and two outside. Among the commercial rigs will be a 14-16-horsepower four-cylinder van built for Gamage, an ambulance van, a 5-ton 25-30-horsepower four-cylinder chassis suitable for an omnibus, a 9-11-horsepower two-cylinder light van and a 20-horsepower tower van. Charron, Girardot & Voigt, makers of the French C. G. V. car, announce they will show identically the same cars at Olympia as they will at the Paris salon. The Lacre Motor Car Co. has in mind exhibiting its new 24-horsepower Albion car for a feature and also several commercial vehicles.

RUSH FOR FRENCH SPACE

Paris, Nov. 5—Complaints are heard on all sides of the difficulty in securing suitable space in which to make a respectable display at the approaching automobile show in the Paris salon, which opens its doors December 8. It seems as if everyone wanted the best there is to be had and in consequence of this rush for space the promoters of the show are puzzled what to do with all the applications. Even the big fellows are kicking because they are unable to get all they ask for and in the main hall it has been found necessary to fix a minimum area, while outside of this mammoth room it is almost next to impossible to get any respectable amount of room in which to display the 1906 product. But it is going to be a great show, a show that will surpass anything of the past not alone in the machines exhibited, but in decorations as well.

It is conceded that the show will lack in anything sensational in the way of striking novelties, but it will be an exhibition which will be noted for the individuality displayed. The makers seem determined to cut away from the single pattern habit and are working out details of their own instead of making it another Mercedes year, such as was the case 3 winters ago. It was thought some little time back that the small cars would be crowded into the background, but recent developments show this report to be ill-founded, for there is every reason to believe that the runabout and the light touring car will be decidedly prominent in the big French exhibit. Several of the big bugs, like Renault and Peugeot, have been boosting the game of the small car so that it seems probable that the leading makers will turn out something reliable in the way of the cheaper cars. The success of the Baby Peugeot in England has so encouraged the Peugeot people that they have gone extensively into the manufacture of the light cars.

The expected invasion of American makers to inspect the leading factories of France is received with surprise on the part of the manufacturers here who so carefully guard their trade secrets. If the Yankees do break into the holy of holies and get a chance to see the inside workings of our factories it will be surprising. As one critic puts it, "the French trade would be much happier to see Americans who come over as buyers."

PANHARD FLOTATION EXPECTED

London, Nov. 4—The flotation of Panhard & Levassor for $12,500,000 is freely talked about as an event that may be in the financial papers any morning. It is a big sum, but so great is the Panhard reputation and so substantial have been the profits earned in the Panhard factories, that it is said that the capital has been all underwritten by very sound speculators. If the Panhard flotation goes off without a hitch—one never knows in these things what to credit—there is no doubt that a few more will follow in the spring. Investors seem to be openhearted in springtime and it would not surprise shrewd judges here if S. F. Edge and Daimlers were the first two English firms to appeal to the British public for increased capital. For most part of 10 years the British motor industry has lain under the investors' bane, but the swing of the pendulum has reached the turn.

Some weeks ago Daimler, of Coventry, after languishing for years for lack of capital, by showing undoubted signs of greatly increased vitality and the possession of a finely designed and constructed car, secured enough to get on a solid footing.

Digitized by Google

GIVE HIM GLAD HAND

Leading Motorists Banquet Chairman R. L. Morrell and Hand Out a Full Line of Jolly

New York, Nov. 9—Thirty men prominent in the trade, racing and journalistic contingents of automobiledom bade Robert Lee Morrell, chairman of the racing board, to the banquet hall of the Waldorf-Astoria tonight, dined and wined him sumptuously, told him what a good fellow he was and how much he had done for America in his successful promotion of the Vanderbilt race, and gave him a lasting souvenir of their friendship and appreciation in the shape of a really magnificent piece of bronze statuary by Carpeaux entitled and symbolizing "La Dance." It was an idea of the resourceful Schwarzkopf, which met with a ready and generous response from all approached. Schwarzy acted as toastmaster until he had paid the opening compliments to the guest of the evening and introduced the one who had been delegated to make the presentation. Then he resigned the leadership of the postprandial gabfest to Batchelder, who, assisted by Wagner as starter and Al Reeves as timekeeper, saw that everyone present got rid of a little speech limited to 3 minutes. By the time the thirty orators had relieved their minds Morrell must have gotten a pretty fair idea that his friends thought him all right and decidedly IT as a racing board chairman and Vanderbilt race promoter. If he didn't either he was very modest or the eloquence of the speakers was unequal to the occasion. The hit of the occasion was the following song to the tune of "Tammany," composed and sung by C. H. Gillette with orchestral accompaniment, all hands joining heartily in the chorus.

All of you have read, I guess, that most great men were small;
Napoleon and Schwarzkopf were neither very tall;
But we've another here with us who runs our racing game,
He's little, but oh, my, oh, my, he gets there just the same.

Bob Morrell, Bob Morrell,
Ran the race to beat the band,
Finest seen in any land.
Bob Morrell, Bob Morrell,
You're a rare one,
Mister Chairman,
Bob Morrell.

Bob Morrell, he is the man that ran the auto race,
Jumping sparks, but didn't he cut out an awful pace;
Maybe he didn't have Long Island farmers on the run
To see the way he jollied them was the greatest kind of fun.

Chorus, etc.

Here's thanks to you, our Bob Morrell, for all the work you did,
And for you on the job next year we all now make a bid;
There's no one else that we can find who could do half so well,
So here's a toast to next year's race and Chairman Bob Morrell.

Chorus, etc.

Among those present were Winthrop E. Scarritt, A. L. Riker, Robert Graves, C. E. Massenet, A. de Magnan, E. R. Hollander, Windsor T. White, Thomas Hilliard, G. M. McWilliams, E. D. Winans, Alfred Reeves, E. E. Schwarzkopf, F. J. Wagner, S. W. Merrihew, H. M. Swetland, Peter Fogarty, Carl Page, F. E. Spooner, and S. A. Miles.

W. K. Vanderbilt, Jr., and Foxhall P. Keene, who were included among the subscribers to the testimonial, sent regrets, accompanied by flattering encomiums of Mr. Morrell.

During the evening it was announced that the A. A. A. directors had passed resolutions indorsing Chairman Morrell's administration, and that Governor Higgins had appointed Mr. Morrell state commissioner for the Jamestown exposition. Both announcements elicited cheers.

ECONOMY AWARDS CONFIRMED

New York, Nov. 13—Although the contest committee of the New York Motor Club will not complete the figures showing the results of the recent 6-day economy test until toward the end of the week it has progressed far enough in the compilation to announce the prize winners. The awards made conform to the statement of results published in the MOTOR AGE. The three chief prizes went to the Reo bus—the National trophy with tire charges eliminated, with an average of $2.93 per passenger; the W. J. P. Moore trophy, tire charges included, with an average cost per passenger per mile of 4.29 mills; and the W. J. Morgan trophy for the lowest gasoline consumption, with an average of $1.60 per passenger for the 682 miles. Having won general trophies the bus was not given a gold medal in its price class.

The Alden L. McMurtry ignition prize went to the Reo runabout, which had no ignition troubles whatever. This car also won the gold medal in the two classes up to $1,500, with an average per passenger of $3.38. In the price class the Compound driven by F. C. Carter took the silver medal for second with an average of $3.72 per passenger.

In the classes from $1,500 to $3,500 the four-cylinder Marmion took a silver medal for second with an average of $4.58. The Reo bus was first, but, as stated above, was barred from receiving a gold medal, having won a general prize.

The Oldsmobile runabout, the Wayne and the Compound driven by C. F. Hatch were awarded certificates for covering the entire distance.

EAGLE ROCK CLIMB SURE

New York, Nov. 14—It now seems assured that the annual Eagle Rock hill climb on Thanksgiving day, formerly promoted by the Automobile Club of New Jersey, will take place as usual this year. With the change of residence of C. H. Gillette, who had managed the former climbs, to Hartford, the Automobile Club of New Jersey abandoned the promotion of the event. This morning, however, a wire was received from Senator Morgan instructing his secretary to see that the New Jersey Automobile and Motor Club, of Newark, N. J., secured at once permission from the West Orange authorities for the climb and stating that he would leave Daytona on Thursday evening to arrange the preliminaries for the event which has proved so popular among motoring sportsmen.

FIGHT FOR A FOOTING

New Yorkers Discovers There Is Embargo Against Admission of Gasoline Trucks to Piers

New York, Nov. 14—Through an investigation set on foot by Alden L. McMurtry and Secretary Lamberti, of the New York Motor Co., which represents the Atlas gasoline trucks in this city, it has come to light that there is a very considerable embargo against the admission of gasoline trucks to the steamship piers. Replies to twenty-five letters sent out to steamship companies by Secretary Lamberti show that ten refuse to admit them to their docks, five allow them on their piers, and ten refuse a reply until they have consulted with their lawyers and insurance agents.

The American, Old Dominion, White Star, Red Star, Leyland, Atlantic Transport, Clyde, Southern Pacific and Maine steamship lines bar them. The Merchants, Quebec, American and Asiatic, Merchants and Miners, and United States and Australia companies admit them.

The commissioner of docks and ferries writes that his department "has no objection to the receipt and delivery of merchandise on the piers along the water front by gasoline motor trucks."

A New York fire exchange representative writes that there is no rule of the exchange that directly forbids the presence of gasoline motor trucks on piers and wharves.

A leading insurance lawyer is quoted as saying: "We are of the opinion that the use of motor trucks is now so common that we think that the standard policy with the usual 'work and material' clause affords protection to the owners of the piers."

There are eight makes of gasoline trucks and delivery wagons in use in this city—Atlas, Cadillac, Knox, Packard, Wheeling, Daimler, Oldsmobile and Maxwell. It is expected that they will join in the campaign of inquiry and education inaugurated by the New York Motor Car Co.

Mr. McMurtry in discussing the embargo said: "It is an injustice not only to the manufacturers of gasoline commercial wagons, but also the users of such vehicles to discriminate against their employment in the receipt and delivery of merchandise on the docks.

"The use of commercial motor wagons is rapidly increasing, and eight different makes of gasoline trucks are finding ready sale in this city. One of the big express companies recently purchased five such wagons for city use and orders are being given for delivery wagons and trucks by wholesale houses, department stores and other large business organizations. The inconvenience to these of having their wagons excluded from some wharves and not from others can easily be imagined.

"The excuse that there is danger of fire from gasoline vehicles is not upheld by facts. The danger is so slight and remote as not to be worth consideration. The commissioner of docks and ferries, leading insurance lawyers and officials of the fire exchange have all given opinions favor-

Digitized by Google

able to the use of gasoline wagons on the piers. Under the circumstances it seems like the worst kind of injustice for ten or a dozen of the big steamship companies to rule gasoline trucks from their wharves.

"I do not believe that such action on their parts is due to any settled opposition to commercial motor vehicles. When they understand how the matter is viewed by insurance authorities I believe they will all throw their wharves open to motor wagons. A campaign of enlightenment will be carried on until this end has been attained."

The objection to the admission of gasoline to the piers had its parallel a year ago in the rule compelling automobiles to empty their gasoline tanks before going on ferry boats. A vigorous fight was made against the unreasonableness of the rule, wherein the danger theory was exploded, which finally resulted in the repeal of the ordinance. It is expected that the present campaign will be successful in the end. With the considerable extent of the use of gasoline trucks already and its rapid growth it would seem that discrimination in the sending of freight would soon bring the objecting companies to their senses.

PASS UP DIXON DEAL

Chicago, Nov. 13—The rumor that a branch factory which will turn out 1,000 Maxwell cars in 1906 will be established in Chicago has been confirmed by A. F. Chase, of the Maxwell-Briscoe-Chase Co., which will handle the output in the central west. Just where the factory will be located Mr. Chase is not ready to divulge, but the deal will be closed in the near future and the plant put in operation at once, as the place he has in mind is ready-made, as it were, the building being already up. It had at first been planned to establish the factory at Dixon, Ill., but this deal fell through.

"For 1906 the Maxwell people have planned to turn out 3,500 cars," said Mr. Chase, who is in Chicago at the present time, it being his intention to make this his permanent home, although he also has business ventures in Minneapolis and St. Louis to look after.

AFTER HOLCOMB'S RECORD

Chicago, Nov. 15—Weather and road conditions permitting, Clovis Bertrand expects to start between midnight and daylight Thursday in a 45-horsepower Clement-Bayard in an attempt to beat the Chicago-New York record of 58 hours 35 minutes made by Bert Holcomb and Lawrence Duffie in October of last year. Though Bertrand has in mind driving the entire distance himself, he will have eight pilots, for the most part well known to automobilists and all well acquainted with every foot of the journey, which is 1,108 miles by odometer and 1,066 miles by the map. A. G. Schmidt, who with Jerome Ellis in an Apperson made the former record of 72 hours 45 minutes, will be his pilot to Toledo. Charles Schmidt, of Gray Wolf fame, will be his guide from Cleveland to Buffalo. Then other pilots will take charge.

FORD PLANS ARE OUT

Four-Cylinder Runabout to Sell at $400 to $500 Announced by Detroit Manufacturer

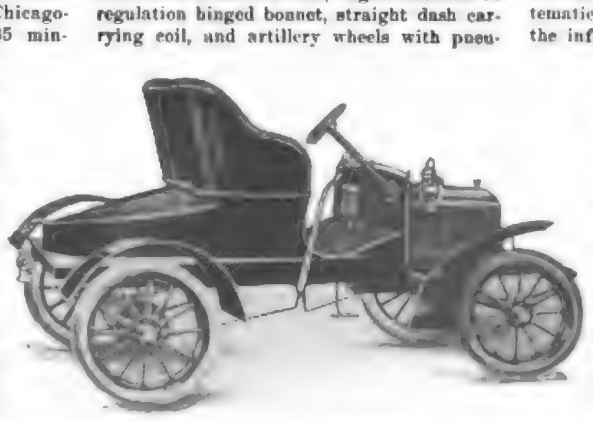
Detroit, Mich., Nov. 15—One of the sensations of the coming automobile season, if not the one, will be the new 15-horsepower four-cylinder Ford runabout that will sell for the low figure of not over $500. The announcement of this little car coming from the hands of Henry Ford, has been awaited for several weeks and has been talked of for months—in fact, ever since it first leaked out in this city that the Ford Motor Co. was working on such a machine. The feature of the runabout is four vertical cylinders mounted beneath a forward bonnet and connected through a planetary gear set and propeller shaft to the rear axle. Good riding qualities are insured by the use of a 78-inch wheel base, 28 by 2½-inch pneumatic tires and half elliptic springs in front with full ellipties in rear.

The little machine weighs but 700 pounds and is carried on ball bearings in the front wheels, with an entire equipment of rollers in the rear axle, with the exception of the end thrust balls.

Each cylinder has a bore of 3⅝ inches and a 3¼-inch stroke, and has the usual water jackets connected with a cooling radiator and tank forming the front of the bonnet, and giving a very touring-car air to the little machine. The mixture is exploded within the cylinders by an electric system consisting of two sets of dry cells for alternative use, a commutator, coil and spark plugs, with all steering wheel control features the same as in big cars. A mechanical oiler distributes the oil to all motor parts, splash within the crankcase oiling other parts.

Three brakes are used—a pair of internal expansion ones on the rear hubs for regular use and applied by lever, and an emergency band on the driving shaft, the latter applied by foot pressure.

As might be expected, the body is not a diminutive toy product or buckboard combination, but a genuine full fledged runabout from radiator to tail light, comprising all luxuries such as individual seats, with heavy upholstering, rear platform with semi-elliptical covered carrying compartment, large fenders in front and rear, engine enclosed in regulation hinged bonnet, straight dash carrying coil, and artillery wheels with pneumatic tires. The body work is regularly finished in maroon, and a full equipment of two side oil lamps, a tail lamp and horn is included, and the use of an inclined steering column connected with Ford reduction gear is one of the points found in this little product.



Ford Four-Cylinder Runabout

Of the other Ford products for the coming season, the six-cylinder 40-horsepower touring car can be considered the leader, combining as it does such Ford features as direct shaft drive construction, ignition by magneto, water cooling system, 114-inch wheel base and all other big car features. The other car, a horizontal two-cylinder machine, known as model F, has accommodations for five people.

WANT RACE FOR FIATS

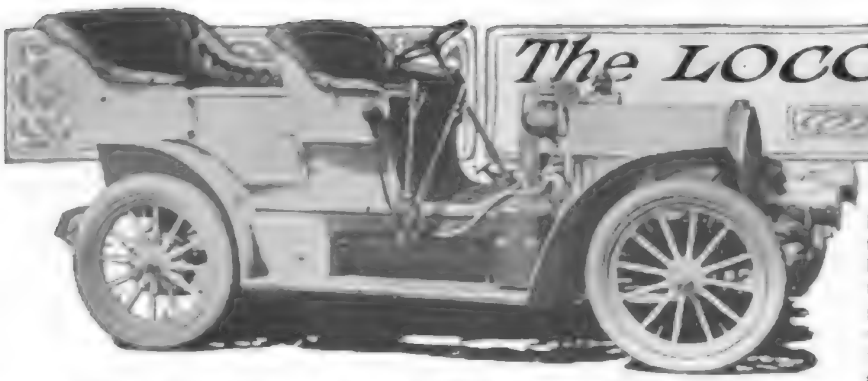
New York, Nov. 13—Senator Morgan is now in Florida. Incidentally he is to arrange for an automobile exhibit, which he is to promote as a part of the pure food exposition at Jacksonville January 4-18. The main object of his trip, of course, has to do with the preliminaries for the southern circuit of automobile and motor boat races. Entry blanks for the Ormond-Daytonia meet will be out this week. The Minneapolis trophy, of $3,000 value, has been allotted to the 100-mile championship, for which W. K. Vanderbilt, Jr., gave a cup last year.

Hollander & Tangeman are eager for a special race between three of the Fiats and three of the Mercedes cars, which competed in the Vanderbilt race. This has given rise to a suggestion that there be added to the program a special race of the approximate distance of the Long Island circuit, to which only the cars that competed in the Vanderbilt race shall be eligible. It is argued that a renewal of the great road race on the beach would be interesting, not only as a second meeting of the cars, but as showing the comparative speed of a road and beach course.

CREATES NEW COMMITTEE

New York, Nov. 9—The board of directors of the American Automobile Association at regular monthly meeting today decided upon the creation of a routes and maps committee, the chairman of which will be Asa Goddard, ex-president of the Worcester Automobile Club. This committee will be considered a subdivision of the national touring committee, and a systematic plan for perfecting and revising the information concerning the main routes of motor travel, with official hotel and garage appointments, will be put into operation immediately. Mr. Goddard will tour in various parts of the country, and the first routes to be arranged will be in New England territory. It is the intention of the A. A. A. to perfect its touring bureau so that when the 1906 season begins it will be prepared to supply members with all kinds of definite information. The Philadelphia Automobile Association, the Red Devil Automobile Club of St. Louis and the Indianapolis Automobile Racing Association were admitted to active membership.

Digitized by Google



The LOCOMOBILE for 1906

TWO models will be manufactured by the Locomobile Co. of America, of Bridgeport, Conn., for the 1906 trade, one a 15-20-horsepower, side entrance car with normal accommodation for four passengers and the other a 30-35-horsepower touring car with accommodation for five. The former machine has a regular four-cylinder motor with 3¾-inch bore and 4½-inch stroke and in the large machine the measurements are 4½ by 5½ inches. The lighter machine is intended for purchasers desiring a light car with medium passenger service and the other model for those wanting the largest style of touring machine.

In both models make-and-break ignition, with current furnished by a gear-driven magnet, is used. A few changes in the valve caps and mechanical igniters are found, but the general lines of the motors remain the same as this year. The clutch and gear box remain unaltered, but internal emergency brakes have been added.

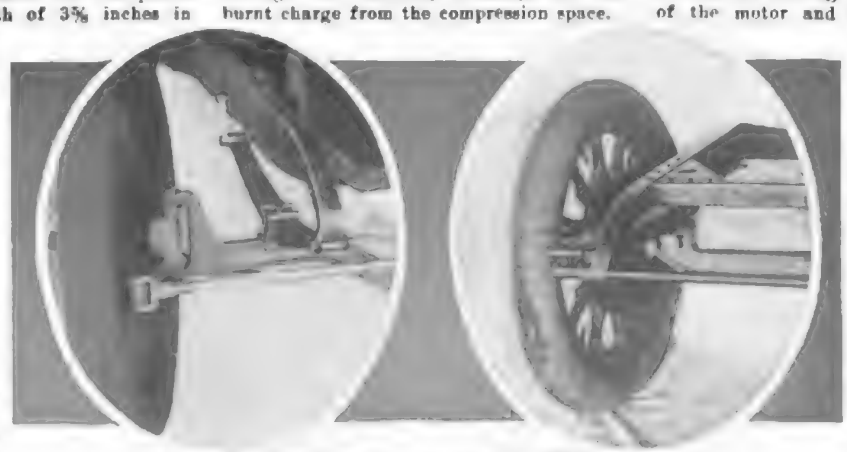
Changes in the running gear are not numerous, though all parts have been materially strengthened. The front axle is a drop forging of I-section with integral spring seatings on either side of a central drop, and the axle ends are drop forgings drawn out and hand welded in place. The rear axle is also made in I-section and is dropped between the spring seatings, the semi-elliptic springs in the rear being thrown outside of the frame so the latter can be hung low and have sufficient room for vibrations, because of the drop in the axle. Similar construction, to that used this season, is found in making the brake drums on the rear wheels and the drive sprockets integral and bolting them to alternate spokes in the road wheels. The pressed steel fame is made with side pieces tapering from a depth of 3⅝ inches in the center to either ends. At the front and rear are cross tie pieces and two others are required for carrying the gear box, the motor lugs resting directly on the frame side pieces dispensing with sub pieces. All the parts are held together by gusset plates. The wheels revolve on plain bearings, with lubrication provided for by the axle stubs being in the form of grease boxes and carrying enough lubricant for many miles. The smaller model has a 93-inch wheel base and carries 32 by 4-inch tires and on the larger machines are 34 by 4½-inch tires and 106-inch wheel base. In each model an aluminum apron encloses the under side of the chassis and protects all of the mechanism from mud and dirt.

The motor used in each model is formed with four cylinders cast in pairs, each having inlet valves disposed in integral valve ports on the right side and exhausts in similar ports on the left, two camshafts being used, one for the exhausts and the inlet shaft serving to operate the ignition devices as well as the inlet valves. Both shafts are driven by enclosed gears at the forward end. The top part of the crankcase is a bronze casting carrying the three bearings of the crankshaft, the aluminum base serving only as an oil pan, being divided between the pairs of cylinders to insure splash for all crank throws. As on the present cars all valves are made interchangeable, but the method of removal is now by bronze screw caps in the tops of the ports, serving for covering the openings, through which the valves may be taken out, instead of caps held by yoke and lock nut as used this season. Copper covered asbestos gaskets are used below the bronze caps. A novelty is added in the fitting of drip cocks in the cylinder walls to facilitate draining the motor in cold weather. Although no change is made in the valves or the actuation thereof, they are timed differently so that the admission valve begins to open before the exhaust is closed, both valves being for a short time open together, the object of this timing being that a current is set up through the exhaust, cleaning out the burnt charge from the compression space.

The crankshaft, a special drop forging, has its bearings ground and hardened and the pistons are made with a slight taper, being 1-10,000 inch smaller in diameter at the top than the bottom to allow for the greater expansion at that end. They are made with four compression rings above the wristpin, each being split diagonally and ground. Steel of I-section forms the connecting rods, which are provided with steel bushings at the piston end and bronze bushings at the crank pins. The wristpins are made hollow.

Motor lubrication is by a specially made mechanical oiler driven from the rear end of the exhaust camshaft. Three feeds are used, one to each of the crankcase compartments and the third to the gear housing enclosing the gears for the governor, inlet camshaft, magneto and pump. Within the crankcase splash is looked up to to care for the cylinder walls and all bearings, there being oil grooves on the pistons for distributing the oil over the cylinder walls. Over all bearings are oil receptacles, which are filled from the splash. In the lower part of the cylinders are oil grooves also filled from the splash when the piston is at the top of the stroke and when the bottom of the stroke is reached the piston pins come opposite the grooves, so that the oil flows into the piston pins. Each crankshaft bushing has angularly cut grooves for running the oil throughout the bearing.

Only a few detailed changes are noted in the cooling system, the most important being the rearrangement of the pipes to and from the cylinders, the water now leaving the pump, entering the top of the jackets between the exhaust valves and, instead of flowing into the top part of the jackets, flows through stand pipes within them, exiting from these pipes in the bottom of the jackets. The exits from the jackets are in the tops, directly in the center, from which the water flows to the top of a Whitlock radiator. On the front of the motor is a rotary fan, belt driven from the pump shaft. The bracket for the fan bearing is carried on the front of the motor and has a separate oiler.



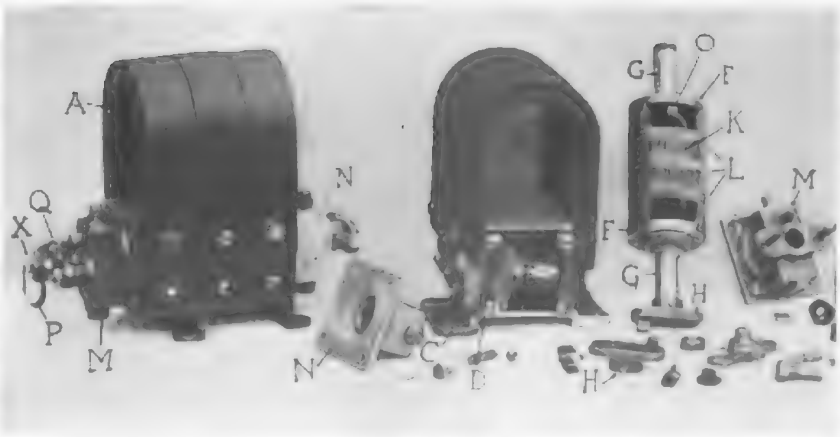
FRONT AND REAR AXLE CONSTRUCTION ON 1906 LOCOMOBILES

One of the most noteworthy features of both Locomobile models for the coming season is the use of low tension ignition with current supplied by a magneto manufactured by the Locomobile company after the design of Mr. A. L. Riker. The simplicity of make-and-break ignition is one of its merits, the entire ignition scheme comprising a gear driven magneto, a single wire to the plugs and make-and-

Digitized by Google

break devices within the cylinders driven from the inlet camshaft, the use of coils, batteries and commutators and high tension wiring being eliminated.

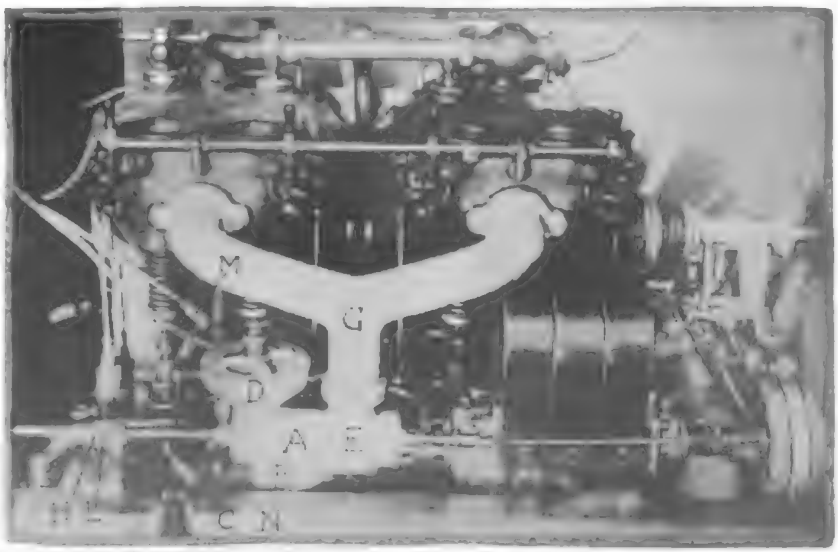
In examining the Locomobile system the magneto naturally comes first. In constructing this machine care has been taken to prevent the disturbing of the armature winding by centrifugal force and also to guard against short circuiting by the accumulation of grease around the winding. The making of all parts with ground joints, thereby rendering the device water tight, is an important fact. The magneto consists of three specially made permanent magnets A, to which are bolted the two pole pieces D, the entire device resting on the base C, by which it is held to the engine crankcase by four vertical dowel pins and one bolt and from which it can be removed by loosening one cotter pin, a nut and a lock nut. Enclosing the three magnets are the hoods B. Between the pole pieces D revolves the armature, the core of which is shown in position at E, but a view of the complete armature is shown just to the right of this, in which K shows the wire winding around the coil and L the three retaining bands to keep the wire in place when the armature is revolving. The end plates F are held to the core by sweated screws and carry the bearings G, which work in the end boxes M and N, the latter not only furnishing long bearings and good lubricating facilities but also when in place, as shown in the assembled view, protecting the armature. Proper insulation of the wire used in the armature winding is essential and in this regard the maker has used a double covering of silk and several coats of shellac. The armature is further insulated by the use of micanite cloth underneath the pole pieces and sheet mica underneath the three sets of binding wires. The armature is driven from a separate gear and the connection between the armature and the gear is through the double clutch pieces H, one pinned to the end of the armature shaft and the other to the gear shaft, so that the magneto can be lifted vertically out of place, the clutches slipping easily in and out of position. Current is taken from the armature through the bent U-shaped spring P, the outer end of which presses against a steel pin X, passing through the center of the shaft, being properly insulated and connected at its inner end with the armature winding. The other end of the winding is grounded through the wire O. From the spring P the current is taken from the terminal Q by wire to the switch on the dash in the large car and thence to the bus bar on the cylinder by another wire, but in the smaller model the wire connects direct with the bus bar. On the bus bar are



LOCOMOBILE MAGNETO AND ITS VARIOUS PARTS

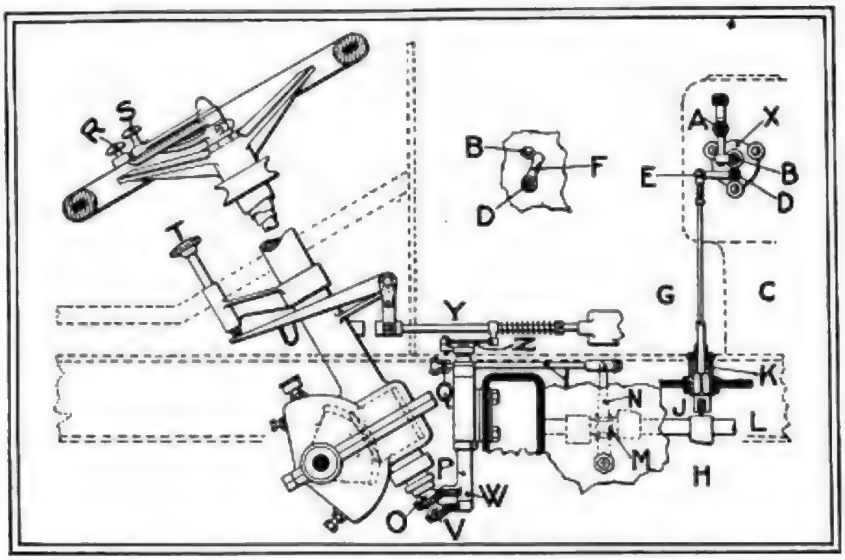
knife-edge switches for cutting out any one cylinder when needed. In the larger model a battery is used for starting the motor, the current being turned on by the dash switch, but in the smaller car the motor is started by cranking, the magneto furnishing sufficient current. In the new machines the bus bar is slightly raised to make the igniters more accessible and is held in place by the split brackets so it can be quickly taken off. When revolving at 150 to 200 turns per minute 30 volts without load is given and 20 with load, and at 900 revolutions per minute this is 75 volts without load and 65 with load

The Locomobile carbureter for the coming season has as its leading feature a balanced throttle and automatic auxiliary air inlet valve. The housing consists of three leading parts, all of which are made from bronze—the float chamber C, within which is a spun copper float for regulating the flow of gasoline into the bottom of the chamber; the vertical cylindrical part B, in which is the spraying nozzle and above this the horizontal cylindrical part A, which carries the balanced throttle and has on its rear end the aluminum supplementary air valve D, the adjustment of which is effected through the nut above the spring surrounding the stem of the valve, increasing the spring tension, causing the valve to open only with greater motor suction and loosening the nut giving the opposite result. This valve comes into use for speeds greater than 15 miles per hour when running on high speed. A simple Y piping G connects with the cylinders. Air enters through the bottom of the cylindrical part B and passing up and around the spraying nozzle, enters the chamber A, and passes towards the front of it until the expansion E is reached. At this point is the rear end of the sliding throttle sleeve or drum and as the drum, which is closed at the front end and open at the rear, is pulled toward the front by the governor rod F or pushed to the front by means of the throttle lever on the steering wheel or the accelerator through the rod H, the mixture passes out and up the pipes G. In the rear end of the drum are V notches which are never closed when the drum is in its closed position, thus permitting of some mixture passing to the motor, acting as they do, like a bypass and preventing the motor from shutting down. By having the chamber A expanded at E, immediately outside of the sliding throttle, the motor suction draws gasses out on all sides of the throttle instead of at one side, so the throttle will not bind in the chamber as it would if the suction was all on the one side. The rod to which the throttle is attached consists of two parts, one H and the other F, both abutting within the part E of the chamber. The part F is connected to the governor through the arm K, so that when the governor acts the rod is free to



INLET SIDE LOCOMOBILE MOTOR, SHOWING CARBURETER AND MAGNETO

Digitized by Google



CONTROLLING MEDIUMS AND CONNECTIONS ON THE LOCOMOBILE

move, not being hampered by any connections with the steering column or the accelerator and jerky action is thereby eliminated. The rod H runs direct to the accelerator pedal, a downward movement of the pedal forcing the rod to the front and carrying the throttle that way. The rod is also connected with the throttle lever on the steering wheel through the arm L, connected with a sliding block on the rod H, the sliding block acting against the coil spring surrounding the rod, so that through the medium of the spring the throttle can be moved to the front. Should a further movement be necessary the accelerator is brought into use. A priming device is installed by means of which priming can be accomplished from the seat, the rod M from the dash carrying a bell crank, the horizontal part of which is directly above the priming cock N in the top of the float chamber.

The gasoline is carried in a 17-gallon tank, which fills practically all of the space beneath the driver's seat. The governor of the ball type is carried within the drive gear on the front end of the exhaust camshaft. Coil springs ordinarily hold the weights together, but when separated by centrifugal force they act on a sleeve connected by yoke with the arm K. The governor is enclosed within an aluminum gear housing.

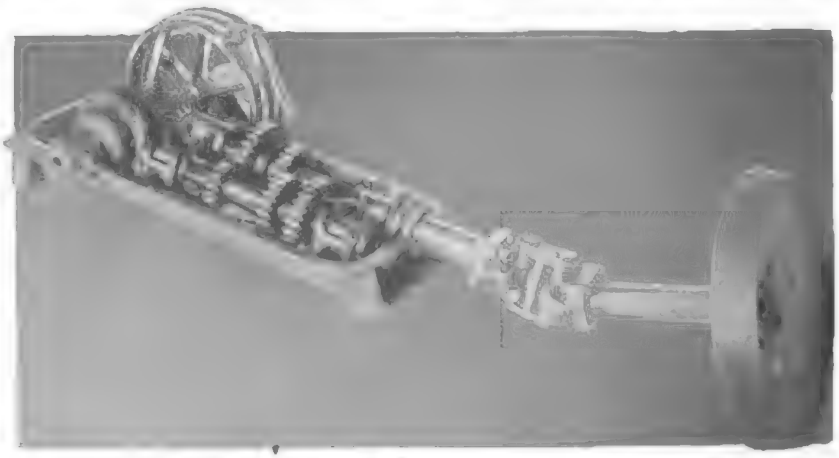
Producing the spark within the cylinders calls for a hammer-and-anvil mechanism, as shown in the line illustration. Current comes through the bus bar A and the knife-edge switch to the bolt-like electrode B, held in the casing X, which has a ground fit with the cylinder casting and is retained by three screws. The moving electrode D is a bolt with an integral arm F within the cylinder, resting against the inner end of B, and outside of the cylinder has the horizontal arm E, the outer end of which rests on the top of the push rod G. This rod G at its lower end carries the small steel roller J, always held against the spiral cam H by the coil spring K. A feature of the camshaft L is that it carries eight cams made integral with it, four of the cams being for opening the inlet valves and the other four for the make-and-break device. The arm F normally rests some distance from the end of B within the cylinder, but when the cam H raises the rod G the arm is raised and later F is drawn from the electrode B, the current tending to bridge the gap passes in the form of a hot spark. Both electrodes are fitted with iridium points, this metal offering the greatest resistance to the effect of the electric arc produced when the spark occurs. Timing of the spark is accomplished by the spiral cams H, the whole camshaft being slidable by means of the collar M, the yoke N coupled with the rod I, which is in turn connected with the spark lever R on the steering wheel through the bevel gear O on the bottom of the tube carrying the spark lever, the bevel gear in turn meshing with another bevel on the tubing P, the top of which carries the arm Q connecting with the rod I. By this connection the entire inlet camshaft can be moved to the front or rear and the timing of the spark altered without affecting the opening or closing of the inlet valves, the inlet cams being made extra long to permit of the sliding. The camshaft at its forward end has a sliding fit in its driving gear.

In this illustration the interconnecting of the throttle lever S, on the steering column and the accelerator pedal T is shown. The lever S connects with the rod Y to the throttle through a tube within the steering column and bevel gears V and W at the base of the column. The latter bevel gear is on the bottom of a vertical tube, to the top of which is attached the arm Z, uniting it with the throttle rod Y. By this arrangement the control of the spark and throttle is as simple as in the ordinary jump spark machine.

In the transmission of power from the crankshaft a flexible connection is provided by the leather faced cone clutch working within a coned flywheel secured to the crankshaft flange by six bolts. The clutch face in the larger car is 2½ inches wide, slightly wider than this year, and the introduction of a double universal joint between clutch and the gear box is novel. This double joint insures correct alignment and greatly facilitates removal of the clutch without dismounting either the motor or gear box. The clutch is engaged by a pair of helical springs on studs fastened to a disk plate within the clutch, the plate forming a part of the thrust bearing of the motor shaft.

There are no changes or improvements in the gear box in either models, three forward speeds with direct drive on the top speed still being used. As heretofore, the differential is carried in the rear part of the gear box. The gear box consists of three parts—a manganese bronze central part for carrying all of the bearings, as well as the entire case, by arms resting on the frame pieces, and an aluminum top and bottom, the latter acting as an oil pan and the former being a gear covering.

In the gear box the main and countershafts are of steel, running in long bronze bearings. The main shaft is squared and carries the sliding unit, consisting of a pair of gears. For direct drive internal teeth on the front of the first sliding gear lock with the gear on the rear end of the clutch shaft, the countershaft running idly. The other forward speeds are through countershaft gears and the reverse idler is in the rear end of the case. Bearings for both main and countershafts are in cross partitions of the case, the case proper forming an enclosed chamber around the ends of either shafts, making the dust and oil-tight features of it more prominent. All



LOCOMOBILE SPEED CHANGE GEAR AND CLUTCH SHOWING DOUBLE UNIVERSAL JOINT

Digitized by Google

THE 30-35-HORSEPOWER LOCOMOBILE FOR 1906

speeds are gained through one lever, speeds from the reverse to direct drive being obtained in respective forward positions of the lever.

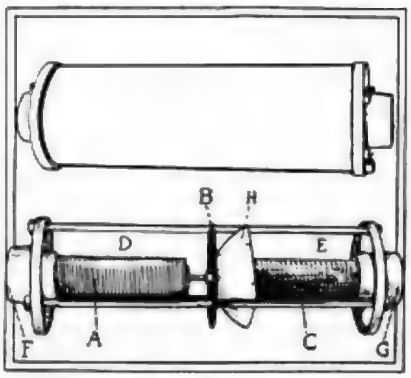
Final drive in both models is by double side chains, the sprockets on the differential countershafts being small and enclosed in metal casings connected with the rear fenders and the running board. The divided counter shaft carries the differential in the rear part of the gear box and has bearings in each side of the gear case as well as others carried by the side pieces of the main frame. Rear wheel sprockets are made very large, standard roller chains are fitted, and shut rods, with turnbuckles used for chain adjustments.

On the differential countershaft and outside of the gear box is the running brake, which is a broad-rimmed wheel 10 inches in diameter and 3½ inches wide, surrounded by a metal band, double acting in its engagement. The metal lining in the band is riveted on in segments, with the object of furnishing a better braking surface. The rear hub emergency brakes are of the internal expansion type working within drums 11 inches in diameter and 1½ inches wide. The expanding shoes are two semi-circular cast iron pieces, pivoted on top to an arm on the radius rod hub and at the lower ends connected by lever link mechanism. Coil springs joining the two expanding shoes hold them off the drums when not applied and a stop rod screwed into the carrier hub rests against the inside of the shoes so that the coil springs do not draw them too far from the drum. Application of these brakes is through lever connected with the brake expanding lever by steel cable and compensating mechanism.

Both machines are fitted with double side entrance bodies, the smaller machine having a hollow dash. Bonnets are of the hinged style, the radiator forming the front end. Large flaring fenders, running side boards, heavy upholstering and the usual style of finish are other body features.

THE PACKARD RUNABOUT

One of the raciest looking runabouts that has been brought out for some time is the Packard, built by the Packard Motor Car Co., of Detroit, Mich., and fashioned in most details after the Packard "24," the company's touring car for the coming season, but differing in body details. The wheel base of the runabout model is 108 inches and the motor is placed further back, so that the radiator is in rear of the front axle. The hood extends as much to the rear as in many of the racing machines. Individual seats are carried a little in front of the back axle and in rear of them is a tool box and rumble seat. By having the front fenders sloping from the front of the bonnet to the

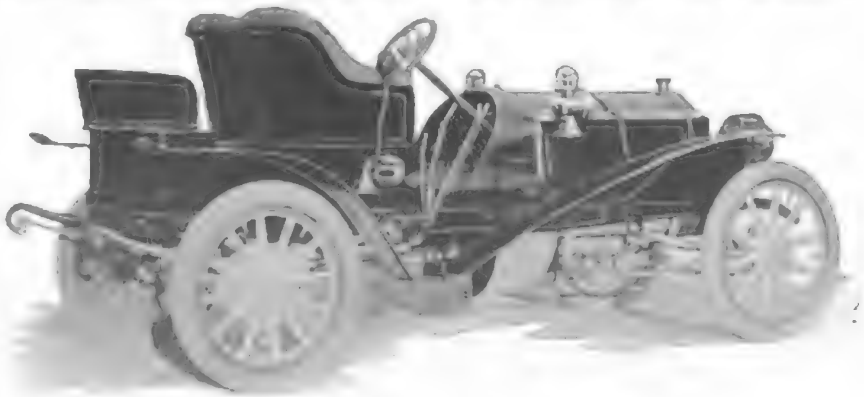


CHAMPION MFG. CO.'S MUFFLER

side steps and using short ones for the rear wheels a decided novelty is introduced. On either side of the round topped dash is a heavy, rounded projecting flange, protecting all mechanisms carried on the dash. The upholstering is in water-grained leather over curled hair and the finish in Richelieu blue, with black mouldings and cream yellow stripings. The running gear is cream yellow with blue stripings. The mechanical features, such as the motor, carbureter, ignition, cooling systems, clutch, transmission, lubrication, control and crankcase, axles, wheels, brakes and other features are identical with those in the touring car. The steering column is inclined at an angle of 37 degrees and has a worm and segment gear. The steering knuckles are carried on imported ball bearings. The framework of the chassis is built on the same general principles as in the touring car, only with the measurements altered. Cold riveting is used throughout and the flanges on the side pieces are extended top and bottom at each cross member junction. Thirty-four by 3½-inch tire are used in front and 34 by 4-inch in the rear. Such control features as lever for emergency brakes, two change speed levers, and spark and throttle on the steering wheel are used as operating pedals.

NEW MUFFLER DESIGN

Champion mufflers, made by the Champion Mfg. Co., of Newark, N. J., are unique in several respects and the maker in designing them has been led by the assumption that the exhaust from the motor should have as full and free an opening into the expanding chamber as possible in order to keep every possible portion of the heat away from the exhaust valves. Each muffler consists of a cylindrical chamber divided into two parts by the baffle plate B, located centrally between the ends. Into the part D the exhaust enters through the connection F. When entering the gases do not come direct into the part D but enter through the flat coil spring A, which is closed at its inner end. The coils of the spring rest so closely upon one another as to make the spring practically a closed tube, with the gases entering at one end. The force of the exhaust gases causes the spring to extend, drawing the coils slightly from one another and leaving spaces between them, through which the exhaust is sprayed, as it were, into the chamber. As soon as the pressure of the exhaust is less than the tension of the spring the coils come together and form a positively closed pipe between the motor and the muffler. The gases after passing from the spring-like tube and expanding pass through the baffle plate B and the saucer-shaped disk H, into the chamber E, through the center of which is the perforated tube C connecting with the outside air. The perforations in this tube are small and arranged symmetrically, providing easy exit to the outer air. The mufflers are made in sizes from 10 to 14 inches in length and 3 to 4½ inches in diameter.



PACKARD CAR FITTED AS A RUNABOUT, WITH RUMBLE SEAT

Digitized by Google

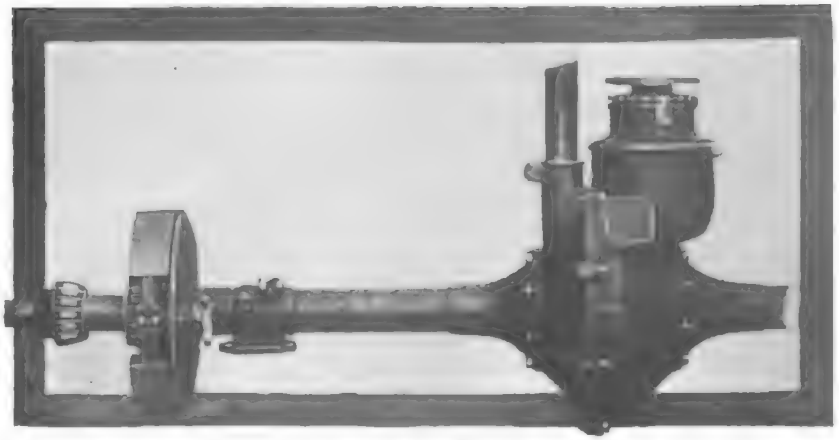
The Royal Tourist

metal float for regulating the flow of gasoline from the fuel tank. The mixing chamber is a horizontal tubing with the spraying nozzle in the center, cold air entering at the front end. At the rear of the chamber is a supplementary spring-controlled air valve. By water jacketing the entire mixing chamber, condensation of mixture in cold weather is prevented. Throttle control is through a quadrant lever on the top of the steering column, near which is a spark advance lever.

Within the gear box several innovations over present construction are met, among which can be noted the suspending of the case from the top half, there being four integral arms for this purpose, each resting on the subframe pieces. Aluminum is used throughout in the case. Another new feature is the carrying of the reverse idler L on a separate shaft in the top part of the case, the shaft being very long compared with bearings, so that it can be shifted in the latter, being in mesh only when in use. A spring throws it out of mesh. Hess-Bright ball bearings, so generally introduced on many of next year's cars, are used in every bearing on the main shaft A and the countershaft B. These bearings are packed in oil and for gear lubrication is an oil bath. The gears are made with very wide face and hardened, and instead of being keyed or pinned to the shafts, are bolted to integral flanges in the case of the larger ones. Direct drive is used on the high speed and on the other two forward speeds and the reverse, drive is to the countershaft and then returned to the main shaft. Changes in speed are given by a lever at the right of the seat, the lever working in a quadrant. Within the flywheel is a spring-engaged cone clutch filled with a leather bearing, beneath which is a series of flat metal springs to ease engagement.

Within the gearcase the main shaft A of squared section carries the sliding unit composed of the two gears E and D, between them being the collar to which the yoke is attached for shifting, the shifting rod passing through the opening S in the top of the case. For direct drive the shifting unit is moved ahead, so that the dental face teeth in the front side of gear D mesh with similar teeth on the back face of gear C; so the shaft A and the clutch shaft, part of which is shown, are united, giving a direct drive along the shaft A, with the countershaft B and its gears revolving idly. For slow speed ahead gears E and H are meshed, for second speed gears D and G, and for the reverse gear E is put in mesh with the reverse gear L, which is at the same time put into mesh with the small gear K on the countershaft.

Transmission from the gearcase is by universal-jointed propeller shaft to the bevel differential in the center of the rear axle. This axle is of the floating type as used this year, the two drive shafts from the differential bevels to the road wheels, carrying none of the weight of the car, which comes entirely on the axle casing. In this way the axle drive shafts can be drawn out by removing the hub caps, which act as clutches, connecting the drive shafts with the road wheels. Long roller bearings are a feature of this axle construction, they being used on either side of the differential as well on the end bearings of the drive shafts and also in the road wheels.



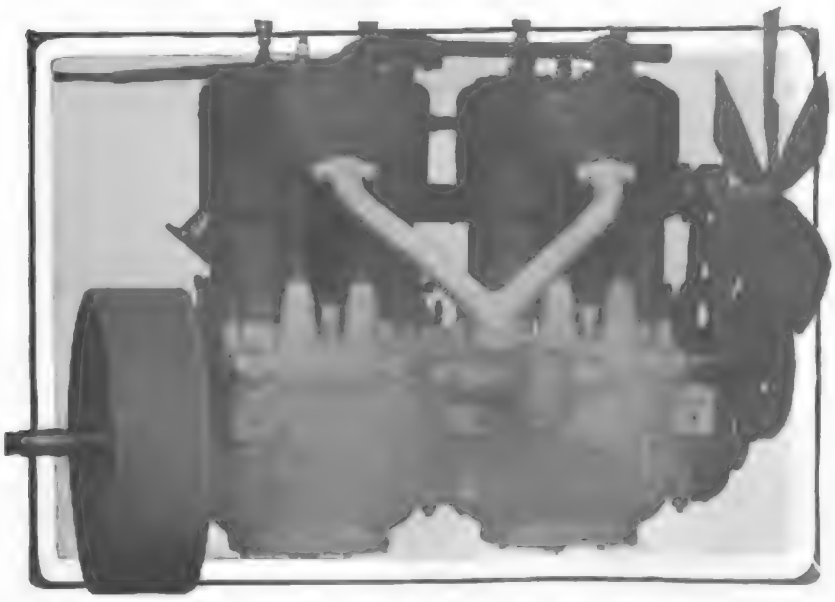
Brake Drum, Differential Housing and Covering for Royal Floating Axle

The differential housing, as can be noticed in the view of the rear axle is made in two parts, being split vertically in line with the bevel gear, and the two halves securely bolted together, with each half in turn bolted to large flanges on the inner ends of the sleeves on the axle tubings. This construction gives sufficient strength for all road jars, relieving to the drive shafts of these entirely. In one half of the differential casing is a seating for the torsion rod which parallels the propeller shaft, as the other half is expanded at the front side so as to encase the bevel on the end of the propeller shaft.

Brake control rests with an internal brake on the drive shaft at the rear of the gear box, it being connected with a pedal for application and interconnected with the clutch releasing it when applied. Emergency internal expansion brakes work within steel drums on the rear hubs. The expanding shoes are cast iron, with a brass facing for contact with the drums. These brakes also are interconnected with the clutch, removing the latter when applied. Cam action expands the shoes, forcing them upon the drums. A feature of the regular brake is the introduction of a pawl that permits the clutch to be engaged with the brake still applied, thus allowing the car to be started on an incline without any danger of running backwards.

A change in the steering gear is made by using a worm and sector gear instead of the rack and pinion type, as used this season. The worm is on the bottom of the steering column and together with the sector is enclosed in an oil tight and dust proof case. The muffler is of standard construction.

The round-topped radiator and arched hood, together with a similarly shaped hollow dash, so conspicuous on this year's Royal tourists, are retained for the coming season, but the other body lines slightly altered, as necessitated by a longer wheel base. The side entrances are wide and provision is made for carrying tools and light baggage. Individual front seats, very heavy upholstery and finish in any standard colors are points noted in connection with it. The body is roomy throughout and has good baggage space.



Intake Side of the 1906 Royal Four-Cylinder Motor

Digitized by Google

The Oldsmobile

MODEL S, a vertical automobile announced by the Olds Motor Works, of Lansing, Mich., for the 1906 market, is conspicuous in that it is the first machine brought out by this pioneer concern with this type of motor carried beneath a forward bonnet. The Olds company has previously adhered to the horizontal motor for pleasure vehicles, but the announcement of a vertical-cylindered machine does not come as a surprise, as the company has for some time been testing out this model. Its coming has been awaited with no little interest by the motor car fraternity. The machine follows standard lines throughout, having as its leading features a cone clutch, sliding gear transmission and shaft drive, with large five-passenger, double side entrance body with hollow dash.

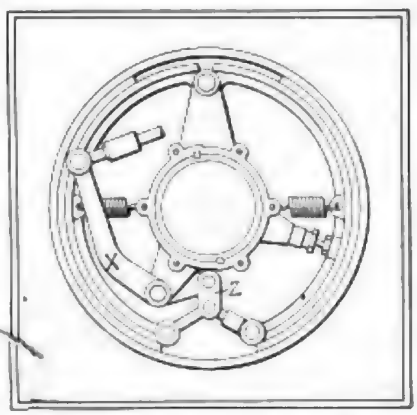
Both the motor and gear box are suspended on a sub-frame carried on cross pieces of the main frame, each part having integral lugs for the purpose. Side pieces of the main frame are made from pressed steel in channel sections and taper from the center to the front and rear, where they terminate in drop forged spring hangers, to which are attached the semi-elliptic springs, the front springs being bolted at their forward end direct to the spring hanger and at the rear shackled beneath the frame pieces. The rear springs are 40-inch semi-elliptics, offset from the frame and shackled at the back end to very long curved spring hangers, a bit of construction giving a racy appearance. Beneath the motor is a metal mud apron, part of which is riveted between the main and sub-frame pieces, acting thereby as a brace to the frame. Other portions of the apron are removable, so as to facilitate examining of the motor.

Thirty-two by 3½-inch tires are used on the front and rear wheels. The front axle is a standard tubing, slightly dropped in the center between the spring seatings, and carries the Elliott type of steering knuckles. It is a 2-inch tubing with ¼-inch wall. The steering connections are furnished with large bearings, each equipped with a T-handled grease cup and protected by a leather dust cap. The rear axle is of the divided type, the drive shafts enclosed within a heavy axle casing, and uniting at their inner ends with the bevels in the differential. Timken roller bearings are used in the wheels, as well as in the rear axle bearings. The wheel base is 106 inches, the weight 2,200 pounds and the tread 55 inches, but treads of 52 or 58 inches will be supplied on order.

The motor has the cylinders cast in pairs, with the water jackets, valve ports and cylinder heads made in a single casting. The valves are carried in ports on the left side, the inlets and exhausts being on the same side, requiring only one camshaft for actuation. By placing the inlets at the adjacent sides of the cylinders forming each pair a single piping suffices to carry mixture to each pair, but a separate exhaust pipe connects from each cylinder with the exhaust pipe to the muffler. The crankcase is an aluminum casting, made in two parts, the top receiving the cylinder castings and carrying the three bearings of the crankshaft, so that the bottom of the case can be readily removed, leaving all parts of the motor properly mounted and not even disturbing alignment.

The crankshaft throws are set at 180 degrees, the two centers constituting a pair, as do the outer throws. The bearings of the shaft, as well as those in the lower ends of the connecting rods, are heavily bronzed with a lining of babbitt, each being grooved for the distribution of oil.

The cylinders have a bore of 4½ inches and a stroke of 4¾ inches, the rated power of 24-26 being given at 1,000 revolutions per minute. The pistons are made from cast iron, ground on the wearing surface, and to further insure proper fitting are run in with belt. On the top part and above the wristpin are the usual compression rings, ground to fit, and on the lower part are oil grooves. Connecting rods made of drop forgings are attached at the lower end to the crankshaft in the usual capping style and on the upper end have a bearing in the large wristpin that is pinned in place in one of the piston journals.



OLDSMOBILE INTERNAL EXPANDING BRAKE

The intake and exhaust valves are located in the bottom of the ports and open upwards by push rods from the camshaft within the top part of the crankshaft. The valves are made with the stems and heads separate, but securely fitted together, the top part made from metal tending to resist pitting to a great extent. Valve springs have the usual attachments to the valve stems and the push rods work in long guides in the top part of the crankcase. The removal of the valves is simplified by having caps fitted in the opening in the top of the ports directly above the valves, the caps simply having to be unscrewed before drawing out the valves.

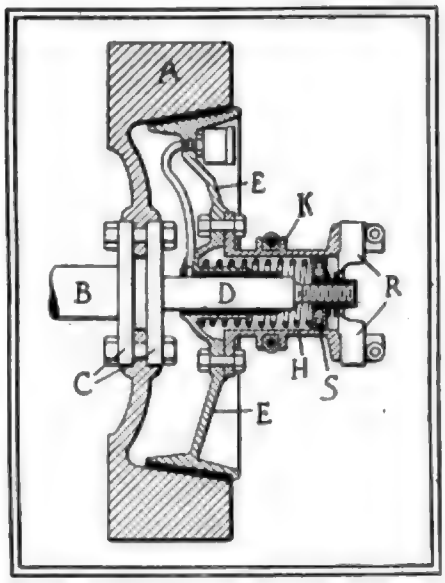
The igniting current is supplied by either dry cells of storage battery, with the coil on the dash and the commutator on the rear of the motor. The latter is carried on the top of a vertical shaft, gear driven from a motor shafting and supplied with special lubricating devices. The spark plugs are placed vertically in the center of the cylinder heads, placing them practically in the center of the combustion chamber. A four unit coil is used.

Motor cooling is accomplished by a water radiating system and fan immediately in rear of the radiator. The latter is of Olds construction and consists of a series of flat tubes connected with a combination water tank. From the radiator water is drawn by a gear driven pump carried on the crankcase and delivered separately to each pair of cylinders and later leaves them from the top parts and returns to the top of the radiator. The cooling space in the radiator is such that the circulating water is always kept below the boiling point.

Oil is delivered to each of the crankshaft bearings from a separate lead from a positive oiler and the lubricant after running through these bearings forms a bath in the bottom of the case, from which it is splashed, filling rings in the pistons and also oil receptacles over each of the other motor bearings. The camshaft depends on the splash for filling the oil cups above its bearings and the cams are lubricated directly from the splash.

In the float feed carbureter air enters the base of the mixing chamber through the opening A, mixture passes to the motor through the exit B, controlled by the throttle K, and for high motor speed additional air is drawn in through the auxiliary valve C, normally held shut by the coil spring

Digitized by Google



CONE CLUTCH ON FOUR-CYLINDER OLDSMOBILE

surrounding its stem. One feature is the cylindrical float G, with the spraying nozzle in the center, the needle valve H within the nozzle, being adjustable from the bottom. Gasoline enters the float chamber through the passage D, controlled by the needle valve E, the valve not closing the passage when the chamber is empty, but on gasoline entering the float rises, allowing the end of the lever F beneath the float to rise and the weight of the needle valve E forcing the other end down, closing the inlet opening. The adjustment of the supplementary air valve can be varied by the thumb screw on the bottom of the valve stem.

The mixing chamber construction is featured by restricting the air passage considerably surrounding the top of the spraying nozzle, giving the passage an inverted con shape and thereby focusing the inrushing gases near the tip of nozzle, insuring a good mixture. Gasoline from the float chamber enters the nozzle through two oppositely placed horizontal passages, either of which, however, is of sufficient capacity to furnish enough fuel for all motor speeds.

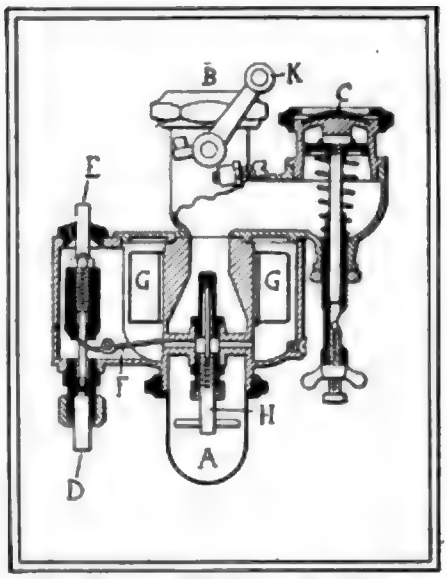
The working of the lever F connecting the float and needle valve E is made possible by having the weight of the float greater than that of the valve, or if not greater having a lack of weight more than compensated for by different lengths of arms on the lever, so that as the float settles its weight will be sufficient to force that end of the lever F down and raise the opposite end, opening the valve E at the same time and admitting more gasoline from the fuel tank, thus maintaining a constant float level at all times.

Transmission of power from the motor is through a friction clutch of standard design. The flywheel A is bolted to the flange C on the crankshaft B, being retained between that flange on the crankshaft end and a similar one on the continuation part D, which forms a bearing for the clutch. The clutch proper consists of a cone shaped disk E, which has its bearing on the continuation D of the crankshaft and is bolted to the sleeve part H, which carries a collar K for the attachment of the shifting yoke connected with the clutch pedal. The casing H terminates in the jaws R, to which the shaft running to the gear box is coupled, and within it is a separate chamber for the clutch spring and a race for carrying the end thrust bearing S. A separate oil cup is supplied for providing lubricant for the clutch hub.

The gear box is carried on the subframe and is an aluminum casting with top inspection caps. The main and countershaft bearings are carried between the top and lower parts of the case. All gears used are made from carbon steel, tempered and hardened, and have very wide faces. Three speeds and one reverse are obtained, the changing of speed being on the selective principle, one lever giving all the speeds. The final propeller shaft is universally jointed and the differential in the rear axle has the usual end thrust bearings.

Three brakes are used, one on the propeller shaft in the rear of the gear box for ordinary use and pedal applied, and two internal expanding ones within the rear wheel hubs for emergencies only. In the latter the expanding shoes are carried on a regular brake hanger at the upper ends and at the lower end are connected by toggle joint with cable to the emergency lever, the bell crank X, when pulled by the cable, forces the link Z and two short arms down, a movement which causes a rubbing of the shoes on the drum. From the hub of the brake hanger coil springs connect with each of the shoes to keep the latter off the drums when not in use.

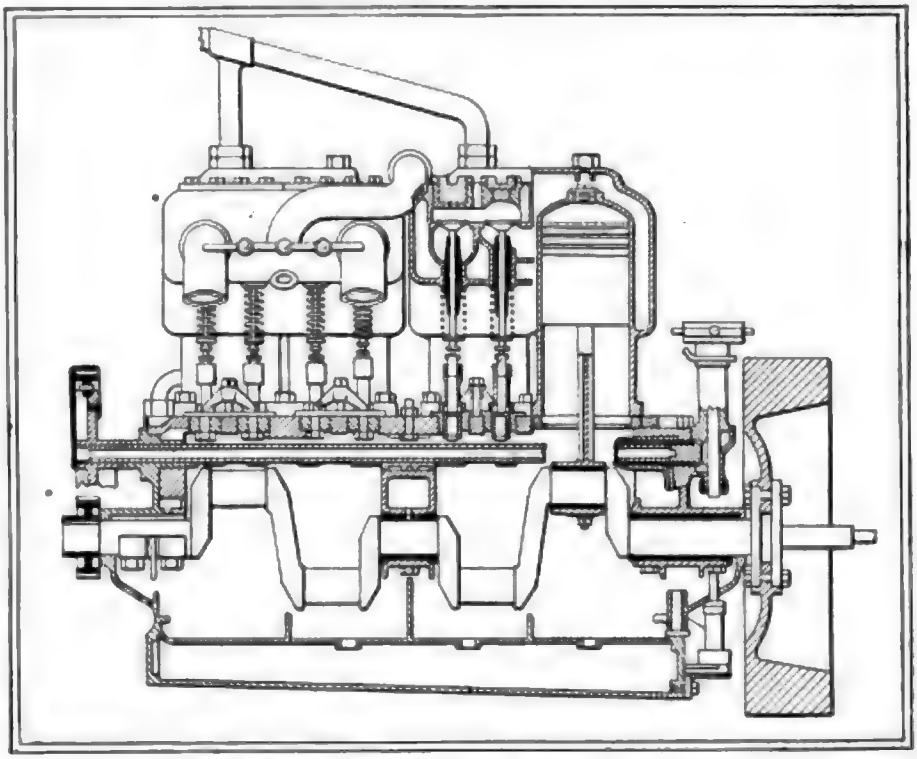
Steering is through a worm and nut gear on the bottom of a well inclined column, the horizontal shaft at the base of the column having a bearing in the side piece of the frame and the rod connecting with the tieshaft between the knuckles being outside of the frame piece. The nut in the gear has a large wearing surface well



CROSS SECTION OLDSMOBILE CARBURETER

babbitted that it may be readily replaced at any time. On the top of the steering wheel are the spark and the throttle levers and the other controlling parts are conveniently grouped about the operator.

The body lines of this model are featured by a hollow metal dash, affording good covering for the coil and other parts, sloping backs to the front and rear seats and a decided forward curve from the end of the frame piece beneath the rear seat. The tonneau entrances are wide and have rear swinging doors; the upholstering is heavy and the radiator is of the plain type. Large flaring front fenders with small rear ones, connected by running board, are other points in the body lines. The body throughout can be described as roomy and well proportioned in every detail, and the finish is in keeping with that of all large touring machines.



SIDE SECTION OF THE OLDSMOBILE FOUR-CYLINDER MOTOR

Digitized by Google

NEBRASKANS USE MOTOR CARS IN HUNTING EXCURSIONS

After Convention—Efforts are being made by the citizens of Hornellsville, N. Y., to secure the next annual convention of the New York and Chicago Good Roads Association.

Herkomer Conditions—For the 1906 tour for the Herkomer trophy the Automobile Club of Germany intends using a longer route, passing over some Bavarian and Austrian territory and finishing at Munich. It will probably be held in June.

Royalty Goes Hunting—President Loubet of France and King Alfonso of Spain became quite chummy on the recent visit to the republic of the young monarch. Both enjoy hunting and President Loubet often went out with Alfonso for a day with the guns, traveling in an automobile to the hunting grounds.

Vermont Officials—H. W. Hall, of Burlington, has been elected president of the Vermont Automobile Association, with J. M. Boutwell, of Montpelier, first vice-president; J. B. Manley, of Brattleboro, second vice-president, and John W. Gordon, of Barre, secretary and treasurer. The membership is now 103.

Enterprise—The De Forest Wireless Telegraph Co., of Kansas City, Mo., has equipped an automobile with a complete wireless telegraph outfit and the car will be held in readiness for calls from newspapers in case of railroad wrecks or other accidents near Kansas City. Similar cars are now in use in Chicago, Detroit and St. Louis and other cities.

Tours in Racing Car—Foxhall Keene has demonstrated that it is possible to use a racing car for touring purposes, having used his 120-horsepower Mercedes, which he drove in the Vanderbilt, to travel from New York to Philadelphia in less than 3 hours actual traveling time. He continued from Philadelphia to Baltimore and Washington.

Club Going South—The Minneapolis Automobile Club has arranged a southern trip which will take in the Ormond beach meet. A special train will be engaged to leave January 22, stopping 2 days on the return trip so the members can take in the Chicago Automobile Show. Asa Paine, vice-president of the club, is also president of the East Coast Automobile Association, hence the great enthusiasm shown by the Gophers over the trip to Florida.

Jacksonville Statistics—Jacksonville, Fla., according to the city recorder, boasts 166 registered automobiles of thirty-eight different makes, of which number 151 are of the gasoline type, seven steam and eight electrics. Runnbouts number 130. The large observation car owned by W. E. Sebree has been shipped there from New York and will be used for sight-seeing tours this winter.

Signs at Last—The Automobile Club of Syracuse has received the first danger signs, which will be widely distributed in the vicinity of Syracuse for the benefit of touring automobilists. The signs are of sheet steel and enamel and bear the words: "Danger—Erected by the Automobile Club of Syracuse." The routes toward Rochester, Utica, Watertown and other cities will receive special attention, as they are the most traveled.

Cycle vs. Car—C. W. Brown, in a 6-horsepower Rover, gave C. H. Larette, on a pedal-propelled bicycle, 5 hours' start in 100 miles over a course from Finchley to Swaffham, England, and beat him, catching the cyclist just as he was getting to Swaffham church. The car maintained 20 miles an hour, once being delayed by a leaky radiator. It was horse and horse, though, for the cyclist was forced to take shelter because of a storm.

Now for Good Roads—The good roads amendment to the constitution authorizing the New York legislature to spend $50,000,000 on the roads of the country was passed by a large majority. In the rural districts of Onondaga county there were 4,192 votes for the amendment and only 985 against it. In Syracuse the vote was: For, 3,700; against, 721. This means much to Onondaga county, which has been in the rear as regards good roads improvement. Prior to the adoption by the supervisors of what is known as the county highway map, petitions for the improvement of about 100 miles of road had been received by the state engineer. The map which was adopted asked for the improvement of 200 miles more, making a total of 320 miles. The amount of money appropriated by the legislature was sufficient to improve only a small portion of this. Of the original 100 miles petitioned for, only 11 miles has been constructed, the work being stopped owing to the exhaustion of the appropriation. Plans are ready for the letting of contracts for 37 miles more as soon as more money is in sight.

Farson is Chief—John Farson was last week elected to the presidency of the Chicago Automobile Club, with Allan S. Ray first vice-president; B. H. Marshall, second vice-president; Sidney S. Gorham, secretary; T. J. Hyman, treasurer, and Ira M. Cobe, N. H. Van Sicklen, Robert Terrant, Jr., F. C. Donald, Jerome A. Ellis and Charles E. Gregory directors. It is Mr. Farson's purpose to work for a new home and a building committee has been named.

Up to Snuff—As the result of a good roads convention being held at Mansfield, O., last week, a resolution was adopted which called for the construction of a mile of sample road by the construction gang of the National Good Roads Association. A permanent organization was effected. Among the speakers for the occasion were Martin Dodge of Washington City and William Bradburn, consulting engineer for the national organization.

Objects to Title—Good naturedly, John T. Landis, of Nashville, Tenn., objects to being called a "reputed millionaire," as he was styled by MOTOR AGE in a recent account of a tour by Mr. Landis from Nashville to New York. "While I enjoy the reputation of being able to take care of myself, I have never before been reputed to be a millionaire, nor do I court such distinction—at least unless fairly earned," writes Mr. Landis from Boston.

Soaks the Chauffeur—According to cable advices, Alois Bauerfield, at one time chauffeur for General Porter, former American ambassador to France, has been sentenced by a French court to 1 month in prison, $100 fine and ordered to pay $3,000 damages for running down and killing a carter named Urbain. The court held the former ambassador responsible in law for his servant's action, although General Porter was not in the car at the time.

Something Doing in Nice—Egged on by the success of the Monaco meeting while its hands were tied by stringent regulations, the Automobile Club of Nice is hustling to raise funds for a big motoring festival next year that will excel anything ever pulled off in Italy. The mile track on the promenade des Anglais is being put into condition for mile and kilometer tests next March and April and a pot of money has been raised to put Monaco in the shade.

Climbs the Balkans—Europe's Percy Megargel, R. L. Jefferson, has, mail advices state, climbed the first range of the Balkan mountains. This gives Jefferson the honor of being the first to cross the Balkans in a motor car. Jefferson's experiences have been out of the ordinary for the reason that no wheeled vehicles are used in the mountains, so that the road in some places are merely trails, with hardly room enough in the passes for a car to navigate. There being no bridges, Jefferson was often forced to drive

Digitized by Google

his car in the streams for a ways before finding a place to climb the opposite banks. Last reports had the tourist on the last stages of his journey to Turkey, he having crossed the Turkish frontier.

Bars Searchlight—England has ruled that a searchlight, or a light that is capable of being used as a searchlight, and is therefore not a fixed light, is not allowed by the law to be carried or used on a motor car.

Rah-Rah Boys Use Cars—The streets outside Franklin field, Philadelphia, during the progress of the football game between Pennsylvania and Harvard, last Saturday afternoon, presented the appearance of a huge open-air garage. For blocks in every direction the motor cars of various vintage and size were lined up along the curb, many of them having been driven by their owners from Boston, New York, Washington and other cities to the scene of the great contest.

Bay State Dope—Statistics gathered by the Massachusetts highway commission show that from May 20 to October 19, 654 convictions were secured for scorching and that $6,457 was paid in fines by the motorists using the roads of the state. These figures are questioned, however, it being claimed that there are no returns from a number of leading cities. In the list Hingham leads with 100 convictions and $1,040 collected in fines. Boston had twenty-two convictions for which $280 was paid by the scorchers.

Massachusetts' Strength—According to the returns received by the Massachusetts state highway commission, on October 15 11,546 automobiles, 1,495 motor cycles and 270 manufacturers and dealers had been registered in the state. The number of licenses issued to what might be called amateur drivers was 10,993, while 4,776 professional tickets were taken out by chauffeurs. Since the commission assumed jurisdiction over automobiles in 1903, $59,351.50 has been turned over to the commonwealth in fees.

Use Motor Car for Hunting—The automobile now serves as a medium of transportation for hunting parties, as an immense amount of territory may be covered in a day. Messrs. Walton and Packwood, of Springfield, Neb., which is 45 miles from Lincoln, recently took a number of friends for a hunting trip of several days. They covered many miles of territory in a search for good shooting. They were enabled to carry along any amount of shooting necessities and report the motor car the modern means of transportation for the hunter.

Handy on Election Day—On election day in Philadelphia every automobile that could be hired or borrowed was in use by the Republican and City parties in getting out the vote. The Broad street garages received all the way from $25 to $50 per car, according to size. Many an invalid had his first automobile ride on that day, and the veteran workers, who were familiar with the old cab and coupe method of getting out the stay-at-homes were enthusiastic over the speed and comfort of the latter-day scheme. Many private owners who were interested in the success of the battle against the boodlers loaned their cars and chauffeurs to the cause, and the splendid victory of the reformers owes no little of its completeness to the motor car. During the long campaign the big Seeing Philadelphia cars were in nightly use by the City party as speakers' stands, while a score or more of touring cars carried the large corps of spell-binders from ward to ward where meetings were in progress.

Kaiser Motor Mad—Germans are wondering if Kaiser Wilhelm will soon abolish the title of master of horse and make that official master of the automobiles, so enthusiastic has the emperor become over motoring. William has just bought seven new cars, bringing his total up to thirteen—more than any other crowned head in Europe possesses. He changes cars as often as he does his uniforms and when he goes for an outing through the streets of Berlin he is preceded by a pilot car in which there is a trumpeter, while three or four other cars follow the one flaunting the royal eagles. It is even said that the emperor is thinking seriously of disposing of his horses, which now have nothing to do but eat their heads off in their stalls.

Florida Show—Directors of the forthcoming January 4 to 18 pure food industrial exposition show at Jacksonville, Fla., propose to include in the display of goods the latest automobile models. The directors have set aside one end of the building right in the center of Jacksonville, opposite the big Windsor hotel. Senator Morgan, who is now in the south, will learn how many feet the exposition people will set aside for the automobile exhibit and will also try and arrange with the transportation companies for a reduction in freight on the prospective exhibits. He will then go on to the Ormond-Daytona beach to meet the tournament committee, which will have charge of the local arrangements for the fourth annual meet. One of the things that will have to be done will be the erection of 20 miles of double line wire to take the place of the present more or less destroyed wire, which has been used for timing the races with the electric clocks the past two tournaments held on the ocean beach.

Saves a Neck—Attempts to lynch Jim Walker, a negro, accused of attacking Mrs. Moore, an Atlanta, Ga., woman, were frustrated by an automobile. The mob had a rope about the negro's neck when Sheriff Nelms came upon the scene, dashing into the crowd in an automobile. He persuaded the mob to let the law take its course and, putting the prisoner into the car, hiked him off to jail. Moore, husband of the woman, assisted the sheriff in his pleading with the crowd, for which he was promised that he could spring the trap when the negro was strung up.

Hill-Climb Out West—Motorists in Riverside, Los Angeles and Pasadena are showing great interest in the proposed hill-climb up the Box Springs grade, scheduled for Thanksgiving day. It is 5 miles of crooked, turning grade, 1,000 feet from the foot to the crest of the range. The steepest part of the grade covers only about 2¼ miles of the total distance, but the rise of 800 feet in this distance is said to be strenuous for any car. Theodore Crossley in a 16-horsepower Wayne has climbed the 2¼ miles in 5 minutes 30 seconds, and Walter Collinge, in a 16-horsepower Reo, has done the full 5 miles in 9 minutes 30 seconds.

Greely Cautious—Contrary to expectations, General Greely, chief signal officer of the United States army, failed to make extended mention of the subject of automobiles as applied to the work of the signal corps in his annual report, recently submitted to the secretary of war. He dismissed the subject with the following brief statement: "Although automobilism is as yet unsuitable for general transportation in the field, yet its utility and advisability for self-propelled vehicles for military purposes has been amply demonstrated. Auto-propelled vehicles have been purchased by this department for experimental uses as parts of telegraphic trains."

YOUTHFUL SPANISH KING TAKES FRENCH PRESIDENT FOR AUTOMOBILE RIDE

Digitized by Google

The Realm of the Commercial Car

The CROWN Delivery Wagon

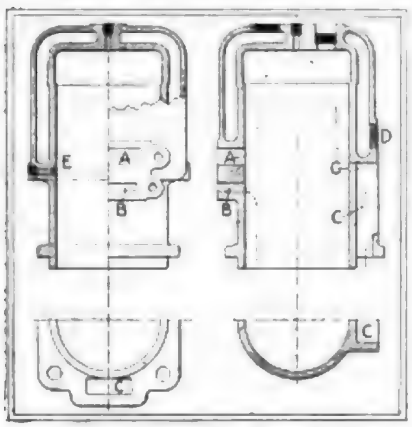
HAVING a vertical two-cylinder two-cycle water-cooled motor placed cross-wise beneath the seat, with drive from the end of the crank-shaft to a planetary gear box mounted on a cross shaft midway of the front and rear wheels of the car and single chain drive to the rear axle, may be considered the leading features of the Crown delivery wagon, manufactured by the Detroit Auto Vehicle Co., of Detroit, Mich. The wagon was placed on the market during the early summer months, previous to which time it had undergone a continued and severe testing period with the object of determining the reliability of the two-cycle proposition for commercial uses. With a brake horsepower of 14 at a crank-shaft speed of 750 revolutions per minute, and weighing 1,100 pounds, and having a load carrying capacity of 1,500 pounds, the machine should be adaptable for many lines of city work, such as deliveries for department stores, furnishing houses, groceries, florists and many of the innumerable lines of city delivery that call for a speed as high as 25 miles an hour.

Standard lines are followed in the frame construction, the 2 by 2½-inch angle side pieces with a ¼-inch wall being straight throughout, with a length of 96 inches and a width of 34 inches. In tieing the side pieces together, angle pieces are used, one at the front, one at the rear, two beneath the driver's seat for carrying the motor, and one back of this, with a center brace to the engine cross piece for carrying the transmission gear box. Gusset plates are used at every junction of frame pieces and hot riveting throughout has been used. Four full elliptic springs, 30 inches long, resting on the usual style of axle seating and pivoted at the top to rods with a dropped part for carrying the frame, give a low center of gravity, the pivoting of the springs on top and the use of radius rods removing driving strain and leaving the springs to carry the load. Both front and rear axles are of Weston-Mott design and straight throughout their length. The front road wheels revolve on double races of Hyatt roller bearings, the spindles having a diameter of 1⅝ inches, the same as the drive shafts in the rear axle. The casing enclosing the latter is heavy, with strong spiders on each side of the differential, and truss rods from the ends of the spider arms to the spring seatings, the spiders being so placed as not to lessen the clearance of the vehicle. The strut rods connect with the frame side pieces slightly back of the bearings of the gear box and are adjusted by turnbuckles in the center. The road wheels have a diameter of 30 inches and carry solid rubber tires. The wheel base is 78 inches and the tread standard.

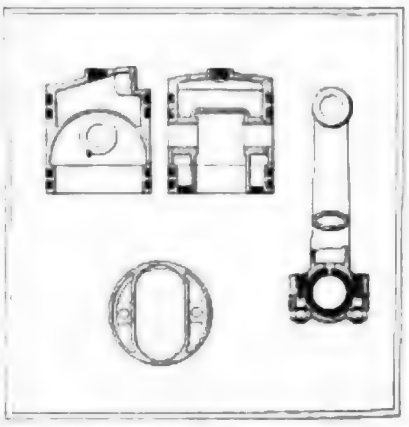
The general disposition of the motor, carbureter, lubricator, radiator and muffler can be seen in the top view of the chassis, the crankcase taking its support on frame cross pieces through the medium of four integral lugs, each bolted to the frame pieces. The bore and stroke are 4½ inches. Like most two-cycle motors the crankcase is used for a pressure chamber for the mixture before it enters the cylinders. In order to obtain as high compression as possible the case is reduced in internal capacity—and is made compression tight—by having enlargement for the two throws of the crankshaft to work in and by reduction of the case between the cylinders, instead of making the base compression space larger, as is usual in most two-cycle motors.

In the sectional views of the cylinders the method of taking the mixture into the crankcase and conducting it to the explosion chamber in the cylinders and later exhausting the spent gases can be studied. The exhaust openings, A, are on the back side of the cylinders and just below are the openings, B, through the cylinder walls for conducting the mixture from the carbureter to the crankcase. The intakes from the crankcase to the cylinders are on the opposite sides and are shown at C, the arrows indicating the mixture flow. Referring to the top view of the chassis the pipes G connect with the exhaust openings and the muffler and the pipes H extend from the carbureter in front of the motor to the intake openings directly beneath the exhaust ports, where the mixture passes into the crankcase. From the case it enters the cylinders through a channel, part of the covering for which can be seen at K in the chassis view or the entire plate shown at K in the view of the front side of the motor. The exhaust ports have an area ¾ by 3 inches, the intake to the crankcase ⅜ by 2½ inches, and the intake to the cylinder from the crankcase slightly less. The bottom of the exhaust port is on a level with the center of the intake port, while the intake to the crankcase from the carbureter is ½ inch lower than the latter.

In reducing the size of the crankcase to obtain high compression the construction of the pistons is varied considerably, it being well understood that where hollow pistons with an outer measurement of 4½ by 4½ inches are used there is at least 32 cubic inches of space within them. To reduce this the maker of the Crown has introduced an arched partition immediately above the wrist pins, an opening for the removal of the core from the space above being in the piston head and plugged. To further reduce the interior capacity of the pistons, side core spaces are used beneath the wrist pins, sufficient room being left between for the connecting rod to work. These two compartments are of half oval shape. The deflecting plate is placed so that the inrushing gas is



FRONT SIDE SECTIONS OF CROWN CYLINDERS



CROWN PISTONS AND CONNECTING ROD

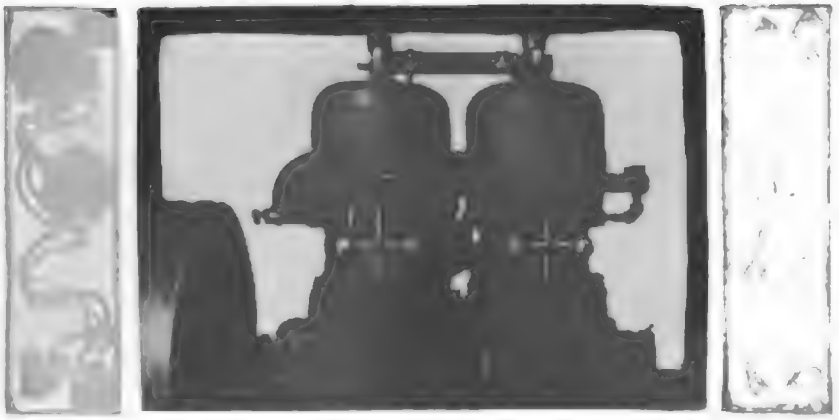
Digitized by Google

directed to the top of the explosion chamber while the exhaust gas is being withdrawn at the opposite side of the cylinder. The wrist pin is made with a diameter of 1 inch and is pinned to the connecting rod, thus having two bearings in the pistons adjacent to the cylinders, so that lubrication is facilitated. The connecting rods are hollow bronze castings made heavy and being large to increase crankcase compression. At the crankpin end is a babbitt bearing, split horizontally, the cap being retained in position by a pair of screws with locknuts and cotter pins. The crank shaft is a drop forging with throws set at 180 degrees. The shaft revolves on three bearings, each having a diameter of 1½ inches and each being furnished with an integral flange 3-32 inch wide and 3-32 inch high so as to retain crankcase compression.

Cooling is accomplished by a water current entering the waterjackets at the front at openings D and pipings D. The exit is through the top of each cylinder by pipes connecting with the top of a horizontal tube radiator of the fin type. Circulation is maintained by a pump on the end of the crankshaft, a separate water tank being eliminated. The radiator is placed well beneath the dash, being protected by the ends of the springs and the vehicle frame.

Jump spark ignition is used, the plugs being placed directly in the cylinder heads with current furnished either by battery or dry cells and distributed by a commutator carried on the right end of the crankshaft. On the motor are individual oil cups for supplying the cylinders and bearings.

The planetary transmission does not offer an innovation in its construction or method of giving different speeds. It is carried on a three bearing shaft, the two end bearings being carried on the main frame side pieces and the center bearing in a special piece uniting two ... pieces of the frame. The shaft has bearings with a diameter of 1¼ inches and works in babbitted journals fitted with individual oilers. On top speed the drive is direct, in that no gears are rotating on their axes within the case, a cone serving to lock all. The slow speed ahead and the reverse are gained by friction bands on the outside of the case drums. The bands are fibre lined,



FRONT VIEW OF CROWN TWO-CYCLE MOTOR

1½ inches wide, with a 9¼-inch diameter. Beside the gear drum is a fourteen-tooth drive sprocket, a forty-eight-tooth sprocket on the rear axle connected with it by roller chain. High and slow speeds are gained through a lever inside of the seat at the driver's right and a pedal furnishes the reverse. Two internal shoe brakes are on the rear hubs, the parts being bronze shoes working within cast steel drums, with an evener rod between the brake pedal and the brakes.

Typical delivery body lines are followed, the rear carrying space of 54 inches long, 42 inches wide and 52 inches high, being protected by a water-proof canopy with wire sides and drop curtains. All operating devices are inside the body.

POOR ROADS TO BLAME

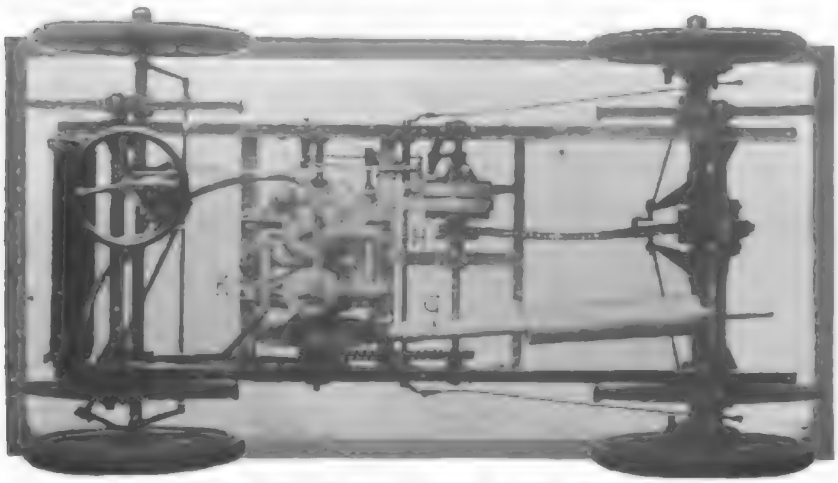
A. J. Gill, who built the first and only complete automobile constructed in Oregon, has sold his interest in the A. J. Gill Co., of Portland, Ore., and connected himself with the H. L. Keats Auto Co. He has charge of the gasoline engine department, retailing Oldsmobile engines and establishing agencies throughout Oregon, Washington and Idaho.

"Building automobiles in Oregon did not pay," he said. "The large, twelve-passenger machine I designed and built for the Deschutes Irrigation Co. for operation on an 80-mile oiled road between Shanike and Bend was constructed at an actual loss to the builders. The machine has also proved a loss to the irrigation company, although it is in good running order, has run 2,000 miles to date, and is in all respects suitable to interurban traffic on any properly constructed road. The machine is now out of commission, the irrigation company having failed to provide a proper roadway on which to operate it."

The automobile referred to is the powerful twelve-passenger machine described in an issue of MOTOR AGE last year, when the Gill company completed it. A trial trip was made on the desert between Shanike and Bend in central Oregon. The plan of the irrigation company was to build a dirt road and oil it, and operate the machine for transportation of passengers from the railroad terminus at Shanike to the town of Bend, 80 miles inland, in the heart of the Deschutes irrigation district. The roadway made by the company proved a failure. The sand was so deep that at many places the automobile was stalled, and it was impracticable to put enough oil on the roadway to make it hard. The machine, after repeated trials, was placed in storage.

PACKARDS FOR HONDURAS

The Packard truck that made its debut early last spring has had a strenuous life ever since, being introduced to practically every phase of transportation common to big cities. Now it is to be shipped to other lands, the equatorial regions being the latest place selected for testing its ability. Three of the regular 1½-ton trucks have recently been shipped by the Packard Motor Car Co. to Central America. The trucks left the factory last week consigned by way of San Francisco and boat to the New York and Honduras Rosario Mining Co. at San Lorenzo, which is on the Pacific coast of Honduras. These trucks are to be used for the transportation of gold and silver concentrates from the mines near Tegucigalpa, the capital of Honduras, to San Lorenzo, a distance of 90 miles, and on the return trip will carry miscellaneous freight for use at the mines. The government of Honduras has spent during the last 5 years over $1,000,000 in improving the road between Tegucigalpa and San Lorenzo, so that it is in good shape and contains no grades greater than 10 per cent. Transportation is at present accomplished by



TOP VIEW OF CROWN DELIVERY CHASSIS SHOWING MOTOR LOCATION

Digitized by Google

SYNNESTVEDT 5-TON ELECTRIC TRUCK SOLD TO ST. LOUIS CONCERN

pack-mule and the New York & Honduras Rosario Mining Co. figures that each truck will replace seventy-two mules. This may seem preposterous at first, but the following data shows how such is accomplished. The average load for a mule is 250 pounds. This is carried in two sacks of 125 pounds each, slung across the back. Six days is the average time occupied by the mule train to travel the 90 miles, depending, of course, upon the weather and conditions of the road. The normal capacity of the motor truck is 3,000 pounds, and it will travel the 90 miles in 9 to 10 hours, or 1 day.

A system of gasoline supply for trucks has been evolved by Mr. Jeffs of the mining company. Gasoline is taken to Honduras in drums, each drum containing 100 gallons. These drums will be distributed at regular distances along the road, in batteries of five drums each, buried in the sand, so as to reduce to a minimum the chances for accident. The five drums of each battery will be connected with one pump, with lock valve. In this way the company hopes to have no trouble whatever in keeping a supply of fuel at hand at all times. The cost of gasoline in Honduras is 20 cents per gallon, no greater than is charged in many parts of the United States. It might be interesting to note that the gold and silver concentrates which the trucks will carry will be shipped to New York, and smelted and refined in the larger refineries of the east.

The trucks have bodies similar to the standard style turned out by the Packard Motor Car Co.

CARRIES 5-TON LOADS

The Synnestvedt Machine Co., of Pittsburg, Pa., builder of electric commercial machines, has during the past summer added to its line of electric trucks a huge 5-ton one, which weighs approximately 5 tons. One of these trucks has recently been sold to the Simmons Hardware Co., of St. Louis, Mo., and before being shipped made a few demonstration runs for the Commercial Automobile Co., of Chicago, its western sales agency. The illustration shows the truck loaded with forty-four heavy trunks used by Marshall Field & Co., the trunks being filled with merchandise to be transported from the retail headquarters at State and Randolph streets to the main distributing center on Cottage Grove avenue for the south side of the city. The weight of the load was slightly over 6½ tons and the truck made the run of 3 miles to the south side at a speed of 6 miles an hour.

The truck is of the side stake variety, made with strong parts. Current for the electric motor is furnished from a forty-cell battery carried on dropped pieces of the main frame. The battery is made up of ten trays of four cells each, the trays being separately removable and weighing approximately 300 pounds each, giving the total battery a weight not exceeding 3,000 pounds. One Synnestvedt four-pole motor supplies power for the rear wheels. The motor is relieved of all pounding and jarring of the road wheels by being carried on heavy coil springs from a cross piece on the truck frame. It is maintained in a fixed position from the rear axle by heavy frame-like strut rods pivoted at the motor, the rods being made so that adjustmnets of the drive chains can be made. The motor has four forward and two reverse speeds. It has practically eight armature windings, two for each pole. On the slow speed the eight windings are connected in series, for second speed the two windings in each pole are united in parallel and the four poles joined in series, for third speed the two poles are joined in parallel, with the other two in series, and on top speed all windings are united in parallel. The controller is horizontally placed beneath the seat and is worked by a short lever at the right of the seat. The motor when under load on level street draws from 75 amperes of current upwards and the voltage ranges from 80 when recharged to 68, the latter being the minimum reading for carrying loads with a medium amperage.

The running gear is provided with a very heavy frame of H-section on which rests the carrying platform. The rear axle is a solid piece of square section 3 inches to the side and the front axle is a sold shafting with a diameter of 2½ inches. Yoke steering knuckles work within heavy jaws pinned to the ends of the front axle. Front and rear wheels are 36 inches in diameter, are shod with 7-inch Firestone tires and run on Moffat roller bearings, the motor also running on these bearings. The spring suspension is a platform scheme in front and rear, the rear platform being attached to the frame at the front ends of the side springs and to the center of the rear cross piece, the cross part of the front platform connecting the rear ends of the front side parts, rests against a cross piece of the frame. The wheel base is 10 feet. Steering is through a column on the bottom of which is a small pinion meshing with an internal toothed quadrant that connects with the tie rod.

THREE PACKARD TRUCKS SHIPPED TO CENTRAL AMERICA FOR USE IN MINING WORK

Digitized by Google

BUSINESS BRIEFS

Tiffin, O.—Landis Eberhart is contemplating opening a garage here in the near future.

Detroit, Mich.—The New Way Motor Co. is now located in its new factory on Sheridan street.

Madison, Wis.—The Mason-Kipp Mfg. Co. has changed its name to the Madison-Kipp Mfg. Co. and has recently enlarged its plant.

Milwaukee, Wis.—Referee Maxwell has appointed Paul E. Muller trustee of the Western Auto Supply Co., with a bond of $3,000.

Bellefontaine, O.—Officials of the Zent Automobile Co. have expressed a preference to moving the plant to Columbus instead of to Lancaster, as was originally intended.

Boston, Mass.—The Butler Motor Car Co., at 998 Bolyston street, will handle this year in addition to the Cleveland car and the Pierce-Racine, the Rapid commercial truck.

Lansing, Mich.—Charles M. Barber, for the past year instructor in history and economics in the Lansing high school, has resigned and will go to Mexico as agent for the Reo.

Providence, R. I.—The Autocar agency, which has been in the hands of the Thomas & Lowe Machinery Co. for the past 2 years, will be controlled by A. S. Hitchcock and G. H. Brown.

New York City—Horace S. Ely & Co. have leased to the Panhard & Levassor Co. for John T. Finn the new four-story garage at the northwest corner of Sixty-second street and Broadway.

Newark, N. J.—Articles of association have been filed for the Turbine Locomotive & Car Co., with an office at 81 Orange street. The concern will manufacture all kinds of motor vehicles for use on land and water.

Cleveland, O.—The Hatcher Automobile Parts Co., which recently succeeded the Brow & Hatcher Co., has fitted up a factory on the Superior street viaduct, where it will produce all kinds of automobile parts to order.

Pittsburg, Pa.—The Central Automobile Co., lately organized by Edward G. Mooney and Edward Seeley, has secured the agency for Pittsburg and vicinity of the Reo car. The Central garage is nearly completed at 5991 Center avenue, East End.

Danville, Ill.—J. S. Chambers & Son have sold their store on Walnut street for a consideration of $16,000. Chambers retires from active business and Earl, who has been in partnership with him, will conduct a garage in the north portion of the town.

Detroit, Mich.—The Michigan Motor Co., of Grand Rapids, has been incorporated with a capital stock of $150,000, and will hereafter conduct its business in Detroit. The company manufactures gasoline engines, motors, propeller wheels, clutches and accessories, boats, launches, etc. The business of the Michigan Motor Co. of Grand Rapids has been taken over at a valuation of $75,000.

Detroit, Mich.—The woodworking plant of J. Beaudette & Co has gone into the manufacture of automobile seats.

Austin, Tex.—S. B. Radkey has opened a garage for the storage and repair of automobiles at 123-129 West Fifth street.

Buffalo, N. Y.—William R. Densmore, formerly with the Packard company, of Detroit, has joined forces with the Centaur company.

Harrison, N. J.—B. G. Koether, formerly purchasing agent of the Hyatt Roller Bearing Co., has left the purchasing department to become assistant sales agent and manager of the company.

Decatur, Ill.—George Johnston and Frank Ruhl, of Clinton, have purchased the good will and machinery of the Keller-Needham Automobile Co. and will continue the business.

Davenport, Ia.—Orey Jansen has purchased the stock and good will of the Davenport Automobile Co. The new management will open a garage at Fifth and Perry streets which will accommodate sixty cars. It handles the Pope-Toledo and Northern.

New London, Wis.—It is believed the town will secure an automobile factory, C. M. Jelieff, a real estate man, having had a proposition from a Michigan manufacturer who is seeking a location. The proposed plant would occupy 12 acres of ground and employ 200 men.

NEW INCORPORATIONS

Boston, Mass.—The Foss-Hughes Motor Car Co. has been incorporated with a capital stock of $5,000. The company will deal in motors, automobiles, etc.

Trenton, N. J.—The Automobile Speedway Co. has been incorporated with a capital stock of $100,000 to construct, maintain and operate speedways for the racing of automobiles. The incorporators are Atlantic City, Jersey City and Baltimore parties.

Pontiac, Mich.—The Welch Motor Car Co. has filed a notice of increase of capital stock from $100,000 to $250,000.

Brooklyn, N. Y.—The Prospect Realty Co. has been incorporated with a capital stock of $6,000 to maintain a garage for motor vehicles.

Atlantic City, N. J.—The Atlantic Automobile and Machine Works has been incorporated with a capital stock of $50,000. It will engage in the manufacture of automobiles and will also conduct a garage.

Frankfort, Ind.—The Automobile Vending Co. has been incorporated with a capital stock of $10,000.

Oswego, N. Y.—The New Amsterdam Motor Co. has been incorporated with a capital stock of $75,000. The company will manufacture motors, engines, batteries, etc.

New York City—The Automobile Realty Co. has been incorporated to engage in the manufacture of automobiles. Capital stock, $6,000.

Union, N. J.—The Union Automobile Co. has been incorporated with a capital stock of $10,000.

New York City—Articles of incorporation have been issued at Albany to the Adams Vehicle Co. Capital stock, $5,000.

Malden, Mass.—The United Auto Supply Co. has been incorporated with a capital stock of $40,000.

New York City—The Auto Auction Association of America has been incorporated with a capital stock of $5,000. The company will deal in automobiles.

Augusta, Me.—The Hamilton Automobile Co. has been incorporated to deal in machinery. Capital stock, $50,000.

LaCrosse, Wis.—The Auto Rapid Transit Co. has been incorporated with a capital stock of $25,000.

BUILDING CHANGES

Flint, Mich.—Ground has been broken for the new factory of the Buick Motor Co. in Oak Park division.

Danville, Ill.—A New York firm, it is reported, is to build a garage with a storing capacity of 300 cars. Estimated cost of the building is about $500,000.

Detroit, Mich.—The Hayes Mfg. Co. will soon move into its new plant, where it will manufacture hoods, dashes, mud guards, tanks and sheet metal specialties.

New York City—Architect J. H. Morgan has filed plans for the four-story garage which the Long Island Realty Co. will build at 1869 Broadway. The cost is placed at $150,000.

Buffalo, N. Y.—John J. Albright is to build a garage and greenhouse on his premises at 130 West Ferry street. The garage is to be built of stone and brick and will cost about $12,300.

Newark, N. J.—Stengel & Rothschild, of Kossuth and Main streets, are contemplating extensive additions to their plant. They are engaged in the manufacture of automobile and carriage leather. The improvements will probably be completed by January 1.

Pontiac, Mich.—The Pontiac Body Co. has made extensive repairs to its factory and has remodeled its power plant. It has also leased the building of the Co-Operative Canning Co. adjoining and will devote itself exclusively to the manufacture of automobile bodies.

Lansing, Mich.—The Auto Body Co. has broken ground for an addition that will double the present capacity. The addition will be of brick and two stories high in the rear of the present plant. Besides the new building for manufacturing purposes, a new steam plant will be built.

Boston, Mass.—Salesrooms for the Ranier and Maxwell automobiles have been opened at 121 Massachusetts avenue, corner of Boylston street, under the management of A. E. Morrison. A garage is in course of construction on Ipswich street, and will be run in connection with the establishment.

Racine, Wis.—An addition to the Mitchell factory is under construction. The new building is to be 207 feet long by 60 feet wide. This is expected to give the plant a capacity of eighteen cars a week. After next year, it is announced, the manufacture of Mitchell motor cycles will be discontinued.

Newark, N. J.—Temporarily the Greene Motor Car Co., recently incorporated with $100,000 capital, is located at 776 Broad street. Contracts have been let, however, for a large garage at 88-90 Washington street and extending through to 9 Bleecker street, which will give room for from sixty to eighty cars. The new company will represent the Locomobile, Mercedes, Panhard, Renault and Oldsmobile in northern New Jersey. R. A. Greene is president, W. L. Clark vice-president, E. A. Greene treasurer and W. C. Overman secretary of the company.

Digitized by Google

ROADSIDE TROUBLES

An Ounce of Prevention

Copyrighted by the American Motor League

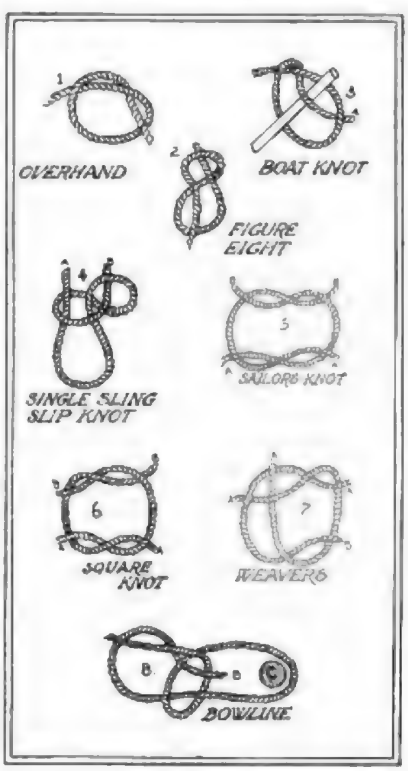
By Chas. E. Duryea

TOWING—It sometimes happens that a vehicle is incapacitated and must be towed. This subject, therefore, becomes of importance, whether it is one's own vehicle that is the cause of the trouble, or whether it is a neighbor that is stranded. If the fault is in the motor or transmission, the vehicle can usually be towed without difficulty. If of the chain variety, the chain should be removed, which will permit the vehicle to run freely. If of shaft drive, with trouble in the motor, disconnecting the clutch or gears will serve to let the vehicle run freely. If, however, the trouble is in the transmission, it may be necessary to disconnect the propeller shaft at the universal joints, which will, of course, free the axle. Most vehicles have brakes which are independent of the chain or propeller shaft, so that these disconnections will not interfere with the proper use of the brake. This is of considerable importance, for if the towed vehicle cannot be stopped it may run into the vehicle ahead or do other damage.

If the disabled vehicle is of light weight, and the other of the front-seat variety, the front passengers may push the disabled vehicle by sitting on the footboard of the uninjured car, with feet against the rear of the disabled rig. This procedure saves hunting for a rope and has been used successfully in many instances. It permits the driver of the uninjured vehicle to keep his eye on the situation better than if towing. It is sometimes possible to tie the front end of a rail against the rear of the disabled vehicle with a bit of light string, in the absence of anything better, and then rest the rear end of the rail against a solid portion of the uninjured vehicle, with one man holding it in place. In this way one vehicle will push the other much as a locomotive pushes a car on a parallel track by means of a stake, as is commonly done in switchyards.

If a suitable rope is at hand, or even a stout wire or chain, the common method is to hitch the uninjured vehicle in front with a space of 10 feet or more intervening. This space gives the man who guides the rear vehicle some freedom in the matter of steering and also some time in which to apply the brake in case the forward vehicle stops suddenly. Most vehicles nowadays have spring ends or spring supports projecting both front and rear and it is quite common to attach the rope to these. This has two objections. The pull is on one side and the rope is quite near to one front wheel. If the forward vehicle suddenly slacks, the rope may go under the wheel and wind up with a great probability of doing damage to the towed machine.

If the running gear itself—that is, the wheels and axles—is damaged, the problem is a little more severe. If a wheel is broken, sometimes a wheel that can be used may be borrowed nearby, but if not, it is usually possible to support that corner of the vehicle by placing a rail under the axle as far to the outside as possible and supporting one end of the rail somewhere on the body or framework, while the other drags on the ground. The step is usually a convenient point of support and can be varied in height by blocking, either under the end of the rail that rests over the step or under the axle where it rests on the rail, or, in extreme instances, by both. Sometimes a short bar can be lashed across the floor of the vehicle, with one end projecting, on which the rail may be supported. The same procedure applies whether the wheel is a front one or a rear one, the only difference being the direction in which the vehicle must be towed after the rail is applied, for it is quite evident that the end of the rail on the ground must project at the rear, in which case this plan, if used to replace a broken front wheel, requires that the vehicle be towed rear wheels first. It will usually be found that it can be steered satisfactorily with the remaining front wheel. Sometimes the broken end may be supported by a wheelbarrow. If both wheels are broken, two rails can be used, as described, but in this event it is usually better to lash a single rail at its front end to the rear of a truck or farm wagon and support the center of the broken end of the vehicle on this, which permits it to be towed easily and safely. Instances are known where a light sulky has been thus used to support the front end of an automobile and where the car furnishes its own power while the sulky by means of its shafts permitted the steering. If one of the rear axle bearings is seized, it is quite evident that removing the chain so as to permit free turning of the balance gear will permit the other rear wheel to revolve freely. It is even possible with one-half of the rear axle fixed, as by seizing, to drive the vehicle by means of the other rear wheel, to which the balance gear transmits all the power at double speed.

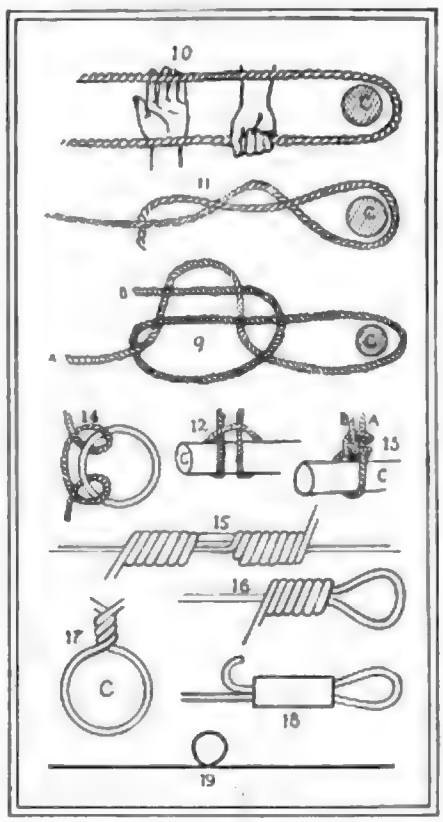


Knots—There are many occasions when one must be able to tie a knot, but there are many people who cannot tie the proper knot for the occasion and who find great difficulty in doing some of the things just described simply because of this fact and not because of any lack of material or great difficulty in the operation. There are many kinds of knots known to those who have occasion to use them constantly, but there are a few which meet the most ordinary needs and which should be known by everyone, for they are just as essential as any other part of a common education. The underlying thought in a successful knot is to bring those portions of the rope in contact with each other that have a tendency to move in opposite directions and in this way cause the friction between the two portions to prevent movement. The simplest and most common form of knot is the overhand, figure 1, in which the rope is formed into a loop or circle with the end passed over and then under the body and up through the loop. There may or may not be something within the loop. If not, this knot will draw down upon itself and form an enlargement in the rope suitable for a handhold or an abutment useful for many purposes. A neck halter for horses is formed by such a knot tightly drawn in the end of a rope and another loosely drawn at suitable distance from the end, through which the end knot is inserted after the rope is placed around the horse's neck. Pulling on this halter will tighten the loose knot, but it will not shorten the loop or choke the horse. In other words, it forms a useful loop for many purposes and is so simple to tie that no one need forget it. It corresponds to the slip knot shown in figure 4, except that the solid knot is in the end A and B would represent the main body of the rope. This overhand knot in its closed form pulls down so tightly that it cannot be

Digitized by Google

readily untied. To secure easy manipulation the figure 8 knot is advised instead for many uses, as in figure 2. A modification of the overhand, although almost identical, is the boat knot, figure 3. This can be tied in the body of the rope, for it depends upon the stick, toggle or post to which it is applied for its holding ability and not upon the fact that the end passes through the loop, as does the overhand. The slip knot shown in figure 4 is identical in construction with the boat knot and also with the halter mentioned, but is usually tied at the end of the rope and by using the end, although many prefer to tie it even at the end of a rope, as the boat knot it tied. As shown, it consists simply of an overhand knot tied around the main body A of the rope. It is sometimes secured against coming untied by tying a closed overhand knot in the remaining end B of the rope after the slip knot is completed and as close to the slip knot as possible. Since this overhand knot cannot pass through the slip knot, without previous loosening, it effectually prevents accidental untying. The slip knot is susceptible of a slight modification, due to a different formation of the overhand knot; that is, instead of forming the overhand knot by carrying the end over and then under, if formed by carrying it under and then over the projecting end will not be parallel but will lie across the main body of the rope. This knot tends to slip and untie itself and it not reliable. If used it should always be protected by tying a closed overhand in the end of the rope so that its yielding will be stopped before it comes untied. Note that the slip knot, like the boat knot, if properly constructed, is untied by slipping the main loop out of the overhand loop when the stick or post is removed. The modified slip knot mentioned will not do this. In figure 5 is shown the sailor's knot, and in figure 6 the square knot. These are both in reality double overhand knots. They are the knots commonly used in tying one's shoe or tying a package; and for these purposes the ends are usually doubled for form bows, which are untied by pulling. This construction is so well known and so apparent that it is not shown. In these knots the only difference is that the ends in the sailor's knot project across their respective rope bodies, whereas in the square knot the ends project parallel to the bodies. This latter arrangeemnt secures more fully the conditions required by a true knot, viz., that adjacent portions, if slipping, must move in opposite directions and the square knot is therefore the better knot, for it will hold with less danger of coming untied and is substantially as easy to untie when required. A modification of these knots is the weaver's knot, figure 7, in which one portion is identical with the same portion in figures 5 and 6, but the end of the other portion passes under and across its body and over both parts of the opposite body, as will readily be seen. This knot also can be tied with a bow, which both adds to its efficiency and is readily untied. A is the body of the rope, B the end and C the post.

What a knot is depends both upon its construction and upon the way in which it is constructed, or, in other words, upon its relation to the body and end of the rope. The weaver's knot is simply another form of the bowline knot shown in figure 8. This latter knot is of the non-slipping variety and is the one most commonly used where it is desired to encircle something without slipping and diminishing the loop. It serves the same purpose as the halter knot, but since it must be tied afresh each time, it is not suitable for a halter. It is easily tied by forming a small kink in the body of the rope through which the end is passed downward, then up over the body, then downward and up through the kink parallel to itself but projecting so that the pull comes in opposite direction, as in figure 8. This description is given because it makes the shape of the knot more plain than the usual method of tying. As usually tied it is begun as an overhand, followed by a pull on the end, which



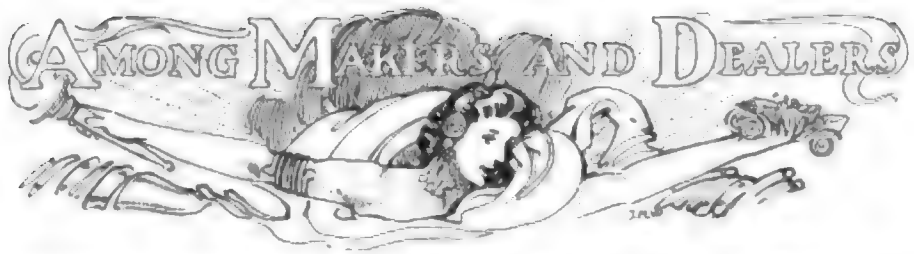
throws a kink in the body, with the end projecting straight through the kink, after which it is completed as above described. A few trials will make this description plain and comparison will show the resemblance to the weaver's knot, which it becomes if the loop around C is cut.

A knot serving the same purpose as the bowline but somewhat quicker to tie and possessing the advantage that it may be tied with a partial strain on the body of the rope, is shown in figure 9. The writer has never seen this knot described and believes its advantages entitle it to a description here. The construction is shown in figures 10 and 11 quite clearly. After encircling the object C the end is brought parallel to the body, each passing over the wrist of the hand that grasps the other, as in figure 10. The hands are then withdrawn, bringing the rope in the position shown in figure 11. The end is then passed over both and up through the loop from below, as shown in figure 9. When drawn tight it will not slip and is readily untied. These knots will meet all common requirements and should be practiced until thoroughly familiar, for when needed their service may be of great importance. A pleasant evening, particularly with the children, can sometimes be spent practicing their quick construction. Figures 12 and 13 show two forms hardly worthy of being termed knots and generally called hitches. These are sometimes used in connection with a knot. For instance, a loop either of the slip knot or of the non-slipping variety if doubled back on itself produces the hitch shown in figure 12. This is easily loosened and yet will grip so as to not readily slip along the part to which it is attached, and it is absolutely prevented from slipping if it is placed so that a projecting point, like a knot on a log, comes between the ropes. In figure 14 is shown a ring attached in the middle of the rope. This is particularly advantageous in certain places, such as anchoring a boat to a rope stretched over the water. The ring can be attached anywhere by forming a loop in the rope, which is pushed through the ring and then spread out and doubled back on itself, so as to pass the ring through the loop. In figure 13 is shown a simple form of single hitch frequently used instead of a slip knot.

Splices—While splicing usually refers to ropes, it is offered here in connection with wires. If the wire is quite flexible, it may be tied as is a rope, but this is not the ordinary nor best method. The common lineman's splice is formed by placing the wires closely together, parallel, with ends projecting in opposite directions. They are then seized with the pliers, so that the ends project 25 or 50 wire diameters. The ends are then turned into a plane at right angles to the main wires, after which they are wound around the main wire as closely as possible. Sometimes this joint will slip the distance represented by the width of the pliers, but usually it will not do so. A loop is formed in the end of the wire by the same process after the wire has been doubled back on itself, as shown in figure 16. When used for wrapping purposes the ends of the wire are simply crossed, seized with the pliers and pulled taut by being twisted, as in figure 17. If the wire is exceedingly stiff, like piano wire, the parallel ends should be wrapped with much finer wire and the entire joint filled with soft solder. A loop in stiff wire is formed by wrapping and soldering or by pushing a small tube over the body, then pushing the end through it and bending a hook to prevent the end pulling out, as in figure 18. Wire-cutting pliers should be a part of the tool equipment, but if not, the wire can usually be quickly broken by nicking it slightly with a file and then bending it at the nick a few times. Exceedingly fine wire, such as is used for tying tags, can usually be broken by kinking it shortly, as in figure 19, followed by a quick jerk, which causes it to break at the kink.

EDITOR'S NOTE—This is the eighteenth of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google



Orders Pipes—Joseph S. Heller, of New York, has returned from Belgium, whither he went 5 weeks ago to arrange for 1906 importations of Pipe cars.

On the Spot—Thomas A. Egan and F. G. Grinnell, of Narragansett Pier, R. I., will establish a garage in connection with the Clarendon hotel, at Sea Breeze, Fla., on the famous Ormond-Daytona beach course.

Exit the Horse—The Pope Motor Car Co., of Toledo, O., has decided to get rid of all its horses, which have been used for trucking and teaming purposes. A week ago last Saturday a Waverley gasoline truck was installed, and in a short time a Pope-Hartford motor truck will be in, when the last horse will go.

Olive Goes Home—Harry L. Olive, who has been traveling in the interest of the Yale automobile for the Consolidated Mfg. Co., of Toledo, O., has resigned and has returned to Los Angeles, Cal., where he will again push the sale of the Peerless automobile, this machine having been handled for some time by Pawley & Olive.

To Handle Berkshires—Douglass Andrews & Co., of New York, have contracted for the entire 1906 output of the Berkshires and established their headquarters at 1623 Broadway, with C. S. Tate as manager. Agencies have already been closed for Brooklyn, Pittsburg, Chicago and Boston. The 1906 models are expected to be ready December 1. These cars are of the 4-cylinder vertical type and are made in 16, 25 and 40 horsepower models.

Moline Deal—Preliminaries for the establishment of the Deere-Clark Motor Co., of Moline, Ill., have been completed and a license to incorporate has been issued to the firm. The capital stock is $100,000, and the incorporators are C. F. Drury, R. S. Blackmore and W. E. Clark. The organization of this company has been in progress for some time and practically the entire capital stock has been subscribed by Moline people. The plant will be situated on First street, East Moline, and plans are already under way for the construction of a building.

Show on Wheels—Plans for a transcontinental automobile show train, to carry the product of the leading manufacturers of the country have been announced by G. A. Wahlgreen, of Denver, Colo., publisher of Motor Field and director of the Pike's peak hill climb, to be held in Colorado next fall. The transcontinental automobile show train will be made up of fifteen or more baggage cars, and according to the promoter will tour the principal cities of America, taking the place of the minor automobile shows which are generally held each year. It is planned to make the trip in September or October of next year. The train will not interfere with the two big shows held annually at Chicago and New York, but is planned by Wahlgreen to take the place of all of the other shows.

Has Swell Place—The Palace Automobile and Machine Co. has opened one of the most pretentious garages in the Harlem district at 208 West 124th street, New York.

New Wayne Men—William B. Young, well known as a bicycle trainer, and Franklin H. Bowen, formerly of the Ford Motor Co.'s metropolitan branch, have been added by A. L. Kull to the selling force of the Wayne Automobile Co. of New York.

Acme Deal Closed—Frank A. Devlin, representing a Chicago and New York syndicate, has closed the deal for the Acme plant at Reading, Pa., the price, it is said, being $250,000. He announces it is his plan to increase the output to 600 cars. Irving D. Lengel will remain as superintendent.

A. L. A. M. Not In It—C. A. Wardle, who was in Chicago this week, denies that the A. L. A. M. is in the least interested in the Inter-State Automobile Clearing Association, of which he is one of the prime movers. Nor is it the intention, he states, to handle any but licensed cars, as it is contemplated that any make of car may be handled in the scheme to bring buyers and sellers of second-hand cars together.

Hub Change—A new company has been formed to handle the Oldsmobile in Boston. The Adams-Sutton Motor Co., which has secured the agency, is composed of W. O. Adams, formerly foreign sales manager of the Olds Motor works, and David Sutton, formerly with the Canadian Bridge Co. At present the company is showing the new models in temporary quarters at 43 Stanhope street, but as soon as the Motor Mart is completed it will have quarters in the building.

Four in Wayne Line—The Wayne line for 1906 is to embrace four distinct models, including two sizes of four-cylinder cars. The model F for next season's market is a four-cylinder motor, with the cylinders cast in pairs. The cylinder dimensions are 5½ by 5 inches, the motor developing 50 horsepower. The speed change gear will give three speeds forward. Hess-Bright bearings will be used all through; a floating rear axle, I beam front axle of nickel steel, 114-inch wheel base and 34 by 4½-inch tires are other features. The model K will also be a four-cylinder car, with 35-horsepower motor, the cylinders also cast in pairs, the dimensions being 4¾ by 3 inches. The transmission and axles on this car will be the same as those on the model F. The runabout will have a double opposed motor 4½ by 4 inches under the hood, and will give 14 horsepower. This car will have shaft drive and sliding gear transmission, with tires 28 by 3 inches. The touring car has an opposed motor 5½ by 5 inches under the body, developing 20 horsepower. The transmission will be through a planetary gear and the tires will be 30 by 3½ inches.

New in Boston—Simeon H. Baker, who has been connected with the Rambler for the past 4 years in Boston, has severed his connection with the Thomas B. Jeffery Co. and has formed a company to be known as the Baker-Cormerais Motor Car Co., to handle the Premier.

Heath in Jail—Howard T. Heath, who claimed he was an automobile manufacturer, has been taken from Chicago to Elgin, Ill., and jailed on two charges of obtaining money under false pretences. John Overst and George F. Volsch claim to have paid him $700 for stock in an imaginary automobile factory.

Pittsburg Wants Show—An automobile show is again being talked of in Pittsburg and it is the apparent desire that such an affair will be held as soon after Thanksgiving as possible. Would-be buyers are more anxious than ever for the show because there are so many new agencies in Pittsburg this fall and so many changes in the old ones that they want a fair chance to look over and have explained to them carefully the merits of the different machines before buying. Negotiations are now pending for the renting of a big building down town and if sufficient support in the way of space and advertising is received from the dealers the affair will be pulled off very soon, it is said.

Winton Plant Working—The Winton factory at Cleveland reports it is now making shipments of four or five cars every day and agents all over the country are being supplied with samples as fast as possible. Charles B. Shanks will be home from his exhibition tour of the country some time within the next couple of weeks and then the output of 2,500 machines will be pushed in earnest. Alexander Winton and Harold Anderson, chief engineer of the Winton company, left last Tuesday for Europe where they will attend the London and Paris shows. Reports that the Winton company will engage in the manufacture of motor boats or that it is identified with the Cleveland Motor Boat Co. is emphatically denied by officials of the Winton company.

Big Fiat Deals—Three announcements of more than ordinary importance are made by Hollander & Tangeman, of New York, importers of the Fiat—the lease of a big garage on upper Broadway, the conclusion of a big importing contract and the incorporation of their business under a new title. They have leased for 10 years the five-story building at the northwest corner of Fifty-sixth street and Broadway, adjoining Smith & Mabley's. During the recent visit of the directors of the Italian company to the Vanderbilt race a contract was signed for the exclusive Fiat agency for 10 years, embracing an order for 1,500 cars to be delivered within that time. They also bought the Fiat patents right outright for this country and Canada, which they claim will enable them to exclude all Fiat cars not purchased direct from them. With the beginning of the new year a

Digitized by Google

stock company will be formed to take over the present business with the title of the Hol-Tan Co.

Reo Transfer—Daniel Cohen, of the New York office of the Reo Motor Car Co., has been transferred to Philadelphia, where he will act as manager of the branch there.

Baltimore, Md.—The Automobile Outing Co., of which J. Q. A. Smith is secretary and treasurer and Richard Keating president, has secured the agency for Baltimore and several counties in Maryland for the full line of Columbia electric and gasoline cars. The company is now establishing itself in a large garage and show room.

Gabriel Doings—The Gabriel Horn Mfg. Co., of Cleveland, O., having secured letters patent for this country on the Gabriel horn, announces that it will institute a vigorous campaign against all infringers. The W. F. Peckham Motor Syndicate, of London, has been granted the agency for Great Britain.

Ford's Cleveland Branch—Euclid avenue, Cleveland, will have another addition to its colony next spring in the shape of a northern Ohio branch for the Ford Motor Car Co., whose line was formerly handled by T. C. Whitcomb. The new establishment will be located at Euclid and Perry streets and will be in charge of Harry Cunningham, who has gained considerable fame on the track. M. J. Roseboro will represent the branch on the road.

Moocrs Looking Around—L. P. Moocrs, formerly designer for the Peerless company, has been in Cleveland the past 10 days looking up material. He is preparing to go into the manufacture of automobiles on his own account. He will probably locate in the east and has not fully decided upon the size of machine he will build. He has been abroad for the past 4 months studying French and German features and he has a number of new ideas which he will embody in the new Moocrs car.

Succeeds Old Firm—The Motor Car Supply Co., of Cleveland, was incorporated last week by W. B. Drown, Erwin G. Guthery, L. H. Drown, E. C. Lessner and A. R. Graves. The company succeeds the State Automobile & Supply Co., which has an establishment in the Pythian Temple building. The company will handle Pittsfield spark coils, a line of four-cylinder engines built to its order, and supplies and material of all kinds; it will also handle motor boats built by the Cleveland Motor Boat Co., a new concern.

Energine Energy—The product known as Energine which has gained considerable prominence throughout the country as a substitute for gasoline, will in the future be manufactured by the Energine Refining Co., a new concern with $500,000 capital stock which has succeeded the Energine company, a smaller concern. The new company is headed by the same people—F. B. Maney, R. P. Beardsley and others of Cleveland. Considerable outside capital has been interested. Heretofore the company's plant in this city has had a capacity of about 100 barrels per day. A new refinery having a capacity of 700 barrels per day is under erection. In addition to the numerous distributing stations in this country, the company has arranged for distributing agencies in London, Paris, Christchurch, N. Z., Johannesburg, South Africa, and Buenos Ayres, South America.

Dispute It—Crydus & Co., of New York, dispute the claim of Emil Stern to the right to place a Leon Bollee agency in this country, as was stated he has done in the appointment of Morris M. Mason.

Making Anti-Freeze Mixture—R. R. Owen, of Cleveland, has organized the Owen Chemical Co., which will push No-More-Auto-Freeze, a preparation whose name bespeaks its character. Mr. Owen has been using the preparation for several years. He bought the formula and has made up 100,000 gallons.

Royal Progress—The Royal Motor Car Co. has completed its new factory building, adjoining the old plant in Cleveland and is preparing to move in. The building is made of concrete block and is two stories high and 50 by 175 feet. The company is installing a large amount of modern machinery and it announces it will produce about double the number of cars that it did last year. Practically all work will be done in its own plant.

Few Reo Changes—The announcement of the Reo Motor Car Co., of Lansing, Mich., for 1906 states that the five-passenger touring car will weigh 1,600 pounds, will have pressed steel frame, half elliptic front and full elliptic rear springs, tubular axles, 30 by 3½-inch tires, a 4¾ by 6-inch opposed motor giving 16 horsepower, Olds carbureter, planetary gear transmission, single chain drive, and a 90-inch wheel base.

New Scheme—A new and original method of introducing its product in places where it has hitherto been unknown has just been inaugurated by the Maxwell-Briscoe Motor Car Co. The company will send a number of its salesmen in touring cars through sections of various eastern states, each carrying along a complete moving picture outfit. Arrangements will be made to give a moving picture exhibition in a public place of the towns visited. The views will include racing and touring incidents, including the performance of the Maxwell car on its trip up Mount Washington. The first of these missionaries to start was P. B. Blisdale, who started over a route which includes many of the towns in northern New Jersey.

Feased by Rents—Automobile firms in Pittsburg are finding out that they have a hard obstacle to overcome in the matter of excessively high rents. This fact alone has kept at least two concerns from locating downtown this fall and is holding up the plans of another newly formed company which desires to do a large storage business for business men during the day when they are at their offices. Downtown lots are worth from $2,000 to $20,000 a front foot according to their location and the business area is so congested in Pittsburg that every square foot of space is very valuable. An amount of room necessary for a garage, even if it be a small one, costs a sum altogether out of proportion to the possible revenues to be derived from storage. Nature has apparently ordained that the automobile business of Pittsburg must be conducted several miles from the business center and the dozens of business men who come in their cars in the morning must put up with the inconvenience as best they may.

Orders Chassis—John T. Rainier, president of the Rainier company, of New York, has just returned from a flying trip to Cleveland, whose object was to arrange for 100 Rainier 30-35 horsepower chassis, to be added to the 1906 output. The Morristown Garage Co. has been given the agency for middle New Jersey and T. S. Morse, of Lenox, Mass., the Berkshire district.

Briscoe Enlargement—The Briscoe Mfg. Co. has recently acquired the plant of the Wheeler Mfg. Co., of Detroit, which is moving into its new factory. This plant adjoins the Detroit factory of the Briscoe company and contains some 15,000 square feet of floor space. While its eastern trade has been handled by the new plant of the company at Newark, N. J., the industry as a whole has so expanded than an enlargement of the Detroit plant was deemed necessary.

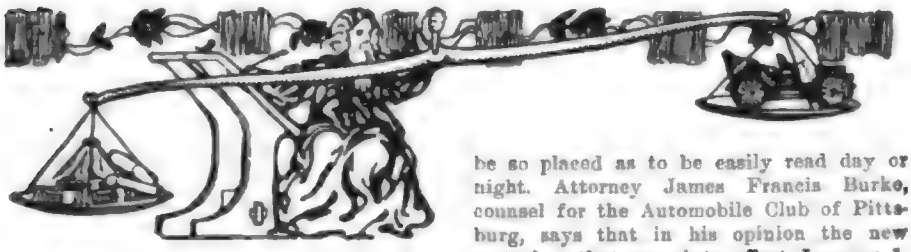
Dealers Bothered—Proprietors of garages in Stanton court, Washington, D. C., of which there are several, are having their own troubles just now, as certain parties in the neighborhood are filing injunction suits against them with a view to stopping certain alleged noises. The latest suit was filed against the Haynes Automobile Co., of which H. A. Rhine is manager. The usual grounds, alleged noises and foul odors, form the basis of the complaint. No action in any of the cases has yet been taken.

New Firms In Cleveland—The retail business in Cleveland is being augmented by a number of newcomers of late and it looks as though next spring would find a considerable overstock of dealers. The following are some of them: The Paxson Motor Car Co., capital stock $10,000; formed by C. D. Paxson, Robert Dash, C. B. Solders, Otto Leisy and A. D. Paxson; the Standard Automobile Co., capital stock $10,000, formed by T. H. Hogsett, G. M. McAlleman, George H. Kelley, George H. Smith and F. B. Williams; the Motor Car Supply Co., capital stock $10,000, formed by W. B. Drown, E. C. Lessner, L. H. Drown and A. R. Graves, and the Ohio Garage & Repair Co., capital stock $10,000, formed by G. W. Hale, J. O. Lundy, H. D. Merrick, I. D. Hogg and E. F. Gibbons.

Buys In—The Standard Automobile Co., of Cleveland, has succeeded the Automobile Garage & Repair Co., for the past 2 years a leading retail concern, and agent in northern Ohio for the Packard, Cadillac and Autocar lines. The new company has a capital stock of $100,000 and the officers are Warren C. Anderson president, George S. Waite secretary and general manager, and John Rauch treasurer. The company's establishment at 404 Huron street, is one of the largest garages in the country. Formerly half of the building, which is four stories high, 80 by 200 feet, was occupied by Price Brothers Carriage Co., agent for the Baker electric line, but from now on the new company will have the whole of the large building, Price Brothers being on the point of moving into a new establishment it has secured just next door at 408 Huron street.

Digitized by Google

LEGAL LIGHTS AND SIDE LIGHTS



NEW QUAKER DECISION

Pittsburg car owners and dealers are alike jubilant over the decision of Attorney General Hamilton L. Carson, handed down at Harrisburg last week, making void all city ordinances regarding the speed and running of automobiles. It will be remembered that the Pittsburg motorists have been fighting with the city authorities on this point for months and the decision of the state official is a victory for them. The text of the decision is to the effect that the last law passed repeals all former state measures and makes the act of 1905 apply not only to automobiles, but to motor bicycles and delivery cars, none of which can be operated after January 1 without a license from the state highway department. An important feature of the new act is that its enforcement will come under the direct supervision of the state highway department and the details under the state automobile bureau, of which H. M. Cutshall will be in charge. Instead of having the license issued by the county prothonotaries as heretofore they will be granted by the state highway department. Two tags will be supplied with every license, one for the front and one for the rear of the machine and they must be so placed as to be easily read day or night. Attorney James Francis Burke, counsel for the Automobile Club of Pittsburg, says that in his opinion the new state law that goes into effect January 1, 1906, will do away entirely with all preceding city ordinances. Such legislation hereafter cannot impose on the automobilists a double burden of taxation, which was the contention of the Pittsburg motorists in the late controversies. In all ways the new state law is likely to be much more satisfactory and motorists are looking forward eagerly to the first of the year when the state highway department will open an office in Pittsburg and bring the licensing of automobile vehicles of all kinds under an orderly management.

The attorney general's decision was made in response to the highway department's request for an opinion, made it plain the new automobile law which goes into effect in the Keystone state next New Year's day repeals all former legislation upon the subject. Some motor cyclists have been claiming that the law will not apply to them, but Attorney General Carson comes out flat-footed and says that it does, and that all operators of the two-wheelers will be compelled to secure a license from the state highway department and carry two tags, just the same as an automobile. Some of the motor cyclists are wondering whether the clause of the new law which requires the rear tag to be illuminated at night applies to them also. In view of Mr. Carson's opinion it would seem that it does. That the carrying of a light so close to the gasoline tank spells danger for a motor cyclist every one admits, and an effort will be made to explain to the attorney general the advisability of placing such a construction upon the new law as will allow the two-wheelers to carry their illuminated number on the front or to so interpret the law on this point as to let the motor-cyclists out entirely. Mr. Carson also made it plain that on and after the first of next year any machine carrying other than Pennsylvania tags while traversing the roads of the Keystone state will bring its operator into conflict with the authorities; all such foreign tags must be removed from a car when it enters the state. No arrangements have yet been made whereby automobilists can secure licenses in their own towns and cities; as the law reads now, all licenses must be obtained from the state highway department, whose only office is located in Harrisburg, the state capital.

WORKHOUSE FOR SCORCHERS

Delegate Frank Hussey, of the twenty-second ward, has introduced in the house of delegates at St. Louis a bill making the offense of exceeding the speed limit with an automobile punishable by from 5 to 10 days in the workhouse. No alternative of a fine is permitted. The measure also provides that not only the chauffeur, but also the person under whose orders he is acting, shall be punished. The present speed limit of 8 miles in the streets and 6 miles in the parks is not changed. Delegates Coale and Smythe, the only automobile owners in the house, voted to lay the bill on the table, but their motion was defeated.

THE READERS' CLEARING HOUSE

ANTI-FREEZING SOLUTION

Chicago, Ill.—Editor MOTOR AGE—I have a four-cylinder motor, with Whitlock radiator, and wish to make a non-freezing solution of glycerine and water. Nearly every one of whom I have inquired seems to have a different proportion. Will a solution of 2 gallons of water and 2 gallons of glycerine be about right, and what would result if more glycerine were used.—CHARLES E. BARTLEY.

Ordinarily 25 per cent of glycerine is sufficient for most climates. Tests have proven that glycerine will freeze as follows: Ten per cent of glycerine in water at 30 degrees Fahrenheit, 20 per cent at 27 degrees, 30 per cent at 21 degrees and 40 per cent at 0. Glycerine and water appear to be frozen when, in fact, they are not; but appear to be in a spongy state. They do not freeze because of the insulation of the molecules. The jelly-like consistency disappears when the mixture has become warm from the heat of the motor.

Calcium chloride is more commonly used for an anti-freezing solution. It is cheaper than glycerine and the tendency is to absorb moisture. Three pounds of chemically pure calcium chloride should be dissolved in 1 gallon of warm water. This will suffice for temperature down to zero. For 20 degrees below zero use 4 pounds to each gallon of water, and for 40 degrees below 5 pounds should be used for each gallon of water. Calcium chloride will not attack any of the metal parts except solder. If a handful of unslacked lime is added to the mixture and dissolved, and the mixture strained before it is put into the radiator, the solder will not be injured.

Glycerine sells for about $2.50 per gallon, whereas calcium chloride is advertised by Chicago wholesale drug houses about as follows: In drums of 700 pounds, 75 cents per hundred; 100-pound drums, 2 cents per pound; 50-pound drums, 3 cents per pound; 25-pound cans, 5 cents per pound; 3 and 6-pound bottles, 8 cents per pound. Supply houses sell 10 pounds for $1 or 25 pounds for $2.

CAUSE FOR NOISES

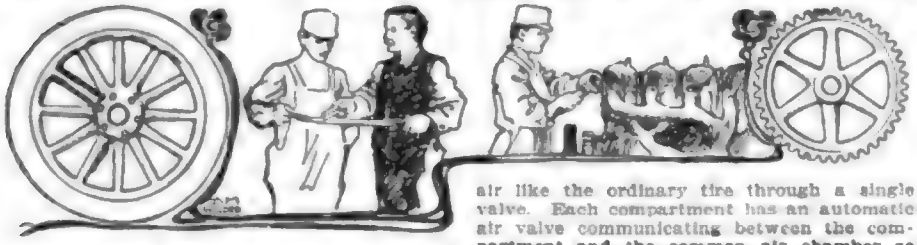
El Dorado, Kan.—Editor MOTOR AGE—Will you please tell me through the Readers' Clearing House what causes the following noises: Whenever my car starts down an incline and gains a little momentum of its own there immediately starts a loud clapping or pounding sound, which continues until the bottom of the hill is reached. I cannot locate it. This same noise is noticeable when the clutch is disconnected and the spark retarded in order to cut down the speed of the motor. It seems loudest when the engine runs free. While the car is standing, with the motor running slowly, if the throttle is opened a little just before starting the car, and the motor picks up a little speed, there is a sort of a popping sound just after each explosion. The cylinder oil cup feeds nearly 15 drops per minute, so it can hardly be a dry piston, although it does seem to come from the cylinder. This noise is hardly noticeable when first starting, but after running 8 or 10 miles it becomes louder and can easily be heard from the operator's seat. I run my car nearly 35 miles every day.—FRANK JEROME.

In running on a decline with the clutch engaged and engine throttled, the momentum of the car exceeds the speed of the motor and when an explosion takes place the speed of the engine is increased enough to take up the back lash or lost motion caused by the momentum of the car gaining on the motor, hence the clapping sound. If the noise continues when the clutch is disengaged and spark is low, it is undoubtedly a loose connecting rod bearing.

The connecting rod caps should be frequently examined to see how the bearings are wearing. Often a cotter pin is sheared off, and a nut works loose, resulting in a loose bearing.

Digitized by Google

Current Automobile Patents

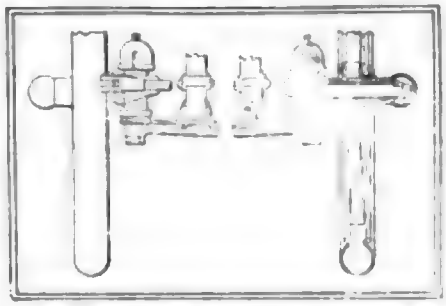


Transmission Gear—No. 803,845, dated November 7; to Charles E. Neal, New York city—The transmission gear referred to gives two forward speeds and a reverse and has practically no gear box as used in most cars. Within the case on the rear axle is a differential with a double-beveled gear A having two gear faces to give different speeds. Opposing this gear is another single gear B for the reverse drive. Between these gears and sliding on the drive shaft C are two bevels of different size. By a double shifting device consisting of D, for sliding the bevels on the drive shaft, and E for sliding the gears A and B to right or left, different speeds are gained. The smaller gear on the drive shaft can be meshed with the larger bevel of A for slow speed, with B for reversing. Fast speed is gained by meshing the larger bevel on shaft C with the smaller one on gear A.

Lubricated Clutch—No. 804,104, dated November 7; to Albert DeDion and George Bouton, Puteaux, France—The automobile clutch described is of the single-disk type; two disks, A and B, being connected with the crank shaft D. Another disk C between them is connected with clutch shaft E. The feature of the device is the method of lubricating, there being little blocks of graphite or graphite carbon inserted in receptacles in the faces of the disks A and B so that the graphite bears against both sides of the disk C. By this method the disks are lubricated and work in a dust-tight compartment, the object of the lubrication being ease of engaging and disengaging and the prevention of heating of the disks. The clutch described is engaged and disengaged through the use of a coil spring and lever arms engaging in the collar on the hub enclosing the spring, all end thrust owing to the spring being taken up by ball bearings.

Divided Air Tubes—No. 804,088, dated November 7; to Manley H. Blakeslee, Buffalo, N. Y.—Conspicuous in the automobile tire referred to is the dividing of the air chamber into ten separate compartments, these being arranged end to end, forming a circle within the outer casing as does the ordinary inner tube. These separate air compartments are enclosed within an air chamber supplied with air like the ordinary tire through a single valve. Each compartment has an automatic air valve communicating between the compartment and the common air chamber so that to inflate the compartments the air is pumped into the common chamber. It in turn passes through the automatic valves into the separate compartments. The object of the construction is that should one of the compartments become punctured the usefulness of the tire is not affected.

Steering Knuckles—No. 803,606, dated November 7; to Fred A. Law, Hartford, Conn.—The steering knuckles referred to in this device differ materially from the ordinary knuckles by having the vertical pivot which carries the spindle for the road wheel attached at its lower end to the axle of the machine, it being different in this regard from either the Le Moine or Elliott type of knuckles. The spindle works in a plain bearing at the bottom and has ball bearings on top encased in a separate cage, making them oil and dust tight. The tie rod is connected to the inner side of the hub of the vertical spindle.



Law's Steering Knuckle

Armor Plated Tire—No. 803,989, dated November 7; to Clarington W. Caterson, Franklin Forks, Pa.—The tire referred to is an ordinary pneumatic having a flexible plate of armor placed within the casing part. This armor consists of a tread portion made like a flat strip. Attached to either side of this are curved side parts corresponding with the curve of the side of the tire. These parts are in reality hinged sheets being hinged in order to not interfere with the resiliency of the tire and yet afford ample protection for it.

Compound Engine—No. 803,823, dated November 7; to Edward T. Pollard, London, England—The compound gasoline engine described, is of the three-cylinder style with the two end cylinders explosion ones and the middle one an expansion cylinder. In the heads of the two explosion cylinders are exhaust valves that open every other revolution and in the expansion cylinder is an exhaust that opens every revolution. In the explosion cylinders are ports uncovered at the end of the out stroke. Passageways connect from these ports to the rear of the expansion cylinder. Non-return valves are placed in these passages.

Armored Tire—No. 803,659, dated November 7; to Arthur S. Allen, Brookline, Mass.—The tire described is secured to clincher rims and has the common air tube. The outer cover is reinforced by three layers of wire gauze embedded between the rubber layers, constituting the casing. The gauze layers are placed so that the wire strands constituting them do not run in the same direction as any two of the layers, thus binding and supporting the tire casing equally in all directions.

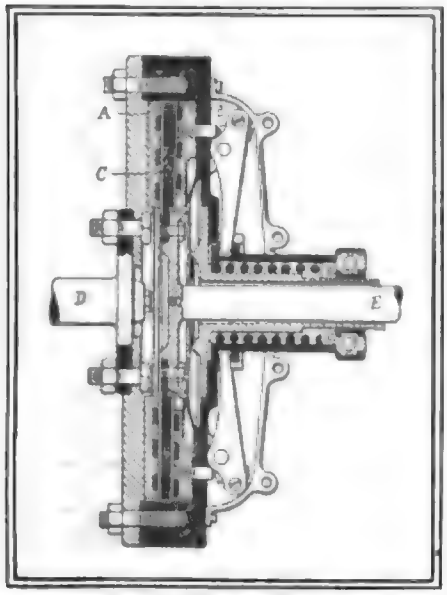
Belt Transmission—No. 803,810, dated November 7; to George A. Cutter, Nashua, N. H.—The belt transmission device described comprises a main shaft and a counter shaft, with the former provided with a pulley, the diameter of which can be varied at will by being constructed of two opposing cones with a movable band between the cones for the belt to travel upon. On the counter shaft is a similar pulley and between the main and counter shafts is an arrangement for sliding one of the cones on either pulley so as to increase or decrease the pulley diameter. A heavy leather belt passes over the pulleys.

Pipe Wrench—No. 803,641, dated November 7; to Emmerson Thompson, Cambridge, and Thomas A. Brown, Toronto, Ont.—The wrench described is an ordinary monkey wrench but which has a separate attachment furnished enabling the wrench to be used on pipes. This attachment is a triangularly shaped piece with one face straight and serrated and the opposite one slightly curved and serrated. When being used, it is placed between the pipe and the outer jaw of the wrench, the curved serrated side being next to the jaw and the straight serrated against the pipe.

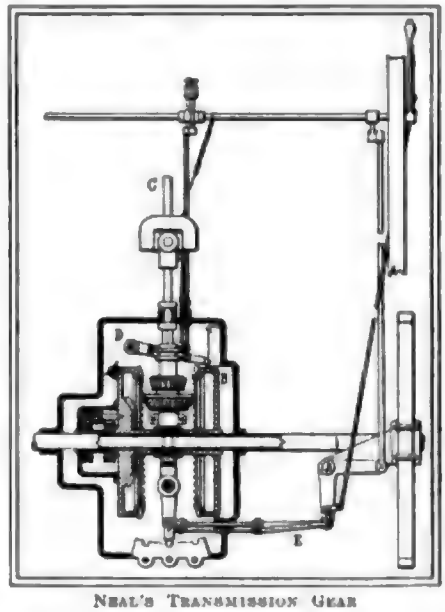
Anti-shock Device—No. 12,399, dated November 7; to Jules M. M. Truffault, Paris, France.—The device described is the Trauffault-Hartford anti-shock, which is designed to be placed between the frame of an automobile and the bottom of the spring, or carried on the axle, the object of the device being to make the action of the spring more uniform and to prevent bouncing when traveling at fast speed over rough surfaces. The device consists of two disks, one attached by a rigid arm to the vehicle frame and the other to the running gear, either by way of the spring or axle. One of the disks is a pan-shaped piece and the other a plain one, fitting within the former. Between them is a friction washer. The disks are held together by a bolt passing through them, the bolt being rigid to one and having a slotted connection with the other.

Mechanical Lubricator—No. 804,033, dated November 7; to Johannes T. Pederson, New York city—The mechanical lubricator described is intended especially for automobile use and is a combination of pressure and gravity feed, the former to be used when the engine is running and the latter in supplying oil before the motor starts, or in case of the pressure feed becoming deranged. Changing from pressure to gravity feed is accomplished by simply turning a button on the top of the oiler case.

Traction Engine—No. 803,361, dated October 31; to Robert Reed, of Logansport, Ind.—The inventor has a traction engine propelled by a four-cylinder gasoline motor carried in front. The crank shaft is constructed to transmit the speed to several propeller shafts, being connected to each through a variety of clutches. Means are furnished for operating each of the clutches and communicating different speeds to the rear driving wheels.



De Dion-Bouton Clutch



Neal's Transmission Gear

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President. Potter Building, New York.

CHARLES E. DURYEA. First Vice-Pres., Reading, Pa.

JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.

FRANK A. EGAN, Secretary, 132 Nassau St., New York.

FREDERICK B. HILL, Treasurer, 32 Bedford St., Boston.

National Headquarters Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

NEW CONSULS

The following named members have been appointed local consuls in their separate localities: T. J. O'Neill, Hanover, Pa.; Elmer E. Hauer, Lebanon, Pa.; James Harvey App, Chicago, Ill.; Charles F. Keene, Toledo, Ohio; Frederick Komp, Rutherford, N. J.; Silas Edgerworth, Springfield, Mass.; Charles M. Connughty, Buffalo, N. Y.; O. Gaston Maxwell, Watervliet, N. Y.; Forney Roberts, Washington, D. C.

TEXAS DIVISION

District 1, counties of Bowie, Cass, Marion, Harrison, Red River, Morris, Titus, Franklin, Upshur, Smith, Wood, Henderson, Van Zandt, Kaufman, Hunt, Hopkins, Lamar, Fannin, Grayson, Collin, Dallas, Cooke, Montague, Denton, Wise, Tarrint, Rockwall and Parker; district 2, counties of Panola, Rusk, Nagogooches, Shelby, San Augistine, Cherokee, Anderson, Houston, Trinity, Madison, San Jacinto, Liberty, Chambers, Jefferson, Orange, Hardin, Jasper, Newton, Polk, Tyler, Sabine and Angelina; district 3, counties of Erath, Hood, Somerville, Johnson, Ellis, Navarro, Hill, Bosque, Hamilton, Corvell, Lampasas, Lennan, Limestone, Freestone, Leon, Robertson, Falls, Bell, Burnet, Williamson, Milam, Burelson, Lee, Travis, Blanco, Hays, Comal, Guadalupe, Caldwell and Bastrop; district 4, counties of Brazos, Grimes, Walker, Montgomery, Washington, Harrison, Austin, Waller, Colorado, Fayette, Gonzales, DeWitt, Victoria, Calhoun, Jackson, Metagorda, Brazoria, Galveston and Lavaca; district 5, counties of Valverde, Edwards, Kerr, Kendall, Bandera, Kinney, Uvalve, Medina, Bexar, Wilson, Atascosa, Karnes, Goliad, Refugo, San Patricio, Aransas, Bee, Nueces, Live, Atacosta, Frio, Zacalla, Dimmit, LaSalle, Mullen, Live Oak, Duvol, Encenial, Webb, Zapata, Starr, Hidalgo and Cameron; district 6, counties of Gillespie, Llano, San Saba, Mills, Comanche, Eastland, Stephens, Palo Pinto, Jack, Clay, Wichita, Archer, Young, Wilbarger, Baylor, Throckmorton, Shackelford, Callahan, Coleman, Brown, McCulloch, Mason, Kimble, Menard, Concho, Runnels, Taylor, Jones, Haskell, Knox, Foard, Hardeman, Lipscomb, Hemphill, Wheeler, Collingsworth, Childress, Hall, Donnely, Gray, Roberts, Ochiltree, Hansford, Hutchison, Carson, Armstrong, Briscoe, Swisher, Randall, Potter, Moore, Sherman, Dallam, Hartley, Oldham, Deafsmith, Parmer, Castro, Bailey, Lamb, Hale, Floyd, Motley, Cottle, King, Dickins, Crosby, Lubbock, Hockley, Cochran, Yoakum, Terry, Lynn, Garza, Kent, Stonewall, Gaines, Dawson, Borden, Scurry, Fisher, Jones, Nolan, Mitchell, Howard, Martin, Andrews, Winkler, Ector, Midland, Glasscock, Sterling, Coke, Tom Green, Irion, Upton, Crane, Ward, Pecos, Crockett, Schleicher and Sutton.

VOLUNTEERS WANTED

The A. M. L. was formed to promote the interest of all motor car users, or rather to enable them by means of an organized body to promote their own interests. Through the league they must ascertain, protect and defend their own rights; by banding together they may prevent the enactment of bad and oppressive laws, but this can be done in no other way. They may provide themselves with printed routes, maps and guide books by which touring may be made easy and agreeable, but this must be done either at considerable expense out of each individual pocket book or by a community of effort and at smaller expense through a large organization. They may work to improve the roads and to erect guide boards and danger signs, but they cannot do this successfully unless they work together.

There is only one league of motor car users in America. There is only one organization which invites all automobilists into its ranks and places all upon an equal footing; there is only one that gives to each member the right to vote and to be represented in the affairs of the national and state bodies. It is the American Motor League. The league is now forming state divisions in the important states. Within the last 4 weeks twenty-five states have been divided into districts having approximately the same population and each containing a number of automobilists and members of the A. M. L. Each of these districts will be called upon to send representatives to the state boards of officers and all states will send delegates to the national assembly. By the national assembly the officers of the national body are elected, the constitution and by-laws made and amended and the work of the league directed at national headquarters.

Twenty-five state divisions will make a splendid beginning. A state division has charge of league affairs within the state. Each state division having 100 or more members elects a chief consul, a vice consul and a secretary-treasurer.

But how are these bodies maintained? Whence comes the revenue and how are the expenses paid? Article 3 of the American Motor League constitution, section 5, provides as follows:

"Section 5. The secretary shall retain from the annual dues and from all renewal fees an amount equal to at least one-third of said dues and fees. The balance of the sum so received shall be divided and disposed of as follows: One-half of said balance shall be returned quarterly to the state divisions of the states from which the dues and fees shall have been received, and the remaining one-half shall be divided pro-rata among the local boards of consuls and league clubs in the cities and towns of said state, according to the number of league members upon the several rolls of said boards and clubs as shown by the last approved quarterly report. All sums so remitted shall be used by state divisions, local boards and league clubs for the exclusive purposes of league work, and must be accounted for in periodical reports sent to the secretary of the league. No state division, local board of consuls or league club shall partake in any division of league dues which shall have been received from members within the state prior to the formation of such state division or local body."

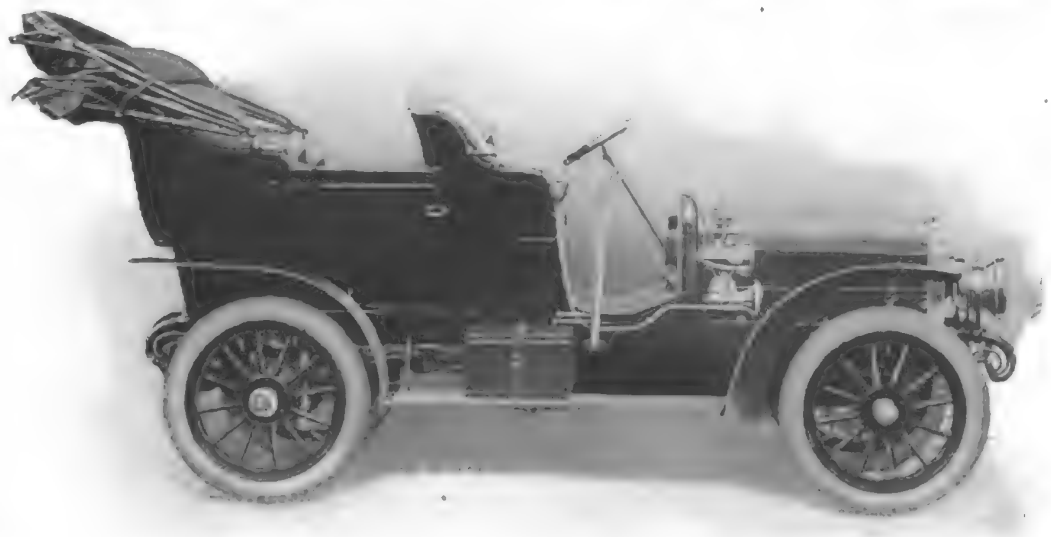
By this arrangement the money is fairly divided; the national, state and local bodies each receiving one-third of the membership dues. The league thus puts money into the club treasury and takes nothing out. Most users of motor cars do not and will not become club members; yet it is clear that the best league work is to be done by the clubs, and it is equally clear that all motorists, whether club members or not, should contribute to the cost of this work. As these league dues are but nominal—$2 a year for each member—it is important that a large number of members be enrolled, for in no other way can a good working income be assured. The number is increasing in all directions, but the best increase comes from the work of members in their home towns. The league wants volunteers; men who believe in this work and will preach it to others.

LEAGUE CLUBS

Any automobile club may become an A. M. L. club and participate in the distribution of league funds. The benefits thus to be enjoyed will be enlarged with the growth of the organization; but in no case is the club required to take money from its treasury to pay league dues, that being done by each member who receives due notice from national headquarters. One-third of all these dues goes back into the general fund to be divided among the league clubs. In the same manner one-third of the dues paid by non-club members within the state is added to the fund.

Digitized by Google

WINTON



UPKEEP SAVED BY ACCESSIBILITY

A passenger locomotive is thoroughly inspected and tested **every day.**

It runs 100 miles and is taken into the round house and "tuned up" before it is permitted to take another trip.

And yet the locomotive runs over level steel rails, stops only at designated stations, and pulls practically the same load day after day. It has **no** bad roads to cover, **no** rocky hills to climb, **no** series of quick and unexpected stops to make, and **no** heavy pulls on one run and light pulls on the next.

But the motor car is compelled to suffer all these abuses, and, by some owners, is never inspected until **something** goes wrong.

For two reasons:

1. Some cars are so **complicated** that the owner **doesn't know how** to inspect and "nurse" his car, taking the little precautions that guard against "going wrong."

2. Most cars are so built that the owner **cannot inspect working parts without tearing down the car.** No wonder he **hates** to go over the engine and transmission to see that everything is right. The owner can't be blamed for not wanting to **spend half his time** tinkering, and tearing down, and building up, meanwhile covering himself with **grease and dirt and perspiration.** But he has only himself to criticize if he buys **that kind of car.**

The new Winton MODEL K is so **free from complications** that any intelligent person can use and care for it without having to hire a chauffeur. And its working parts are absolutely **the most accessible** in the world.

No Winton owner considers it a hardship to inspect working parts. So **easily** are these reached that to keep a MODEL K in perfect condition is a **pleasure.** Simply turn a handwheel and either engine or transmission is **instantly laid bare.**

Not even necessary to remove one's cuffs, for the Winton MODEL K combines immediate accessibility with **thorough cleanliness.**

REMEMBER THIS: Many an **expensive repair bill** can be **saved** by "a stitch in time."

That "stitch in time" is merely the **occasional inspection** of working parts.

No automobile on the market has working parts that can be inspected with such **ease, rapidity and cleanliness** as the new Winton MODEL K.

"The typical American motor car," says the Americanized Encyclopædia Britannica.

The Get-At-Able Winton Model K.—Four-cylinder, vertical, water-cooled. 4½ inch bore. 5 inch stroke. Non-breakable, individual clutch transmission. That perfect Winton Air Governor. Winton Twin Springs, comfort givers and money savers. Lubrication, Ignition and Carburization systems perfected to the minute. $2500 f. o. b. Cleveland.

Valuable agency territory still open

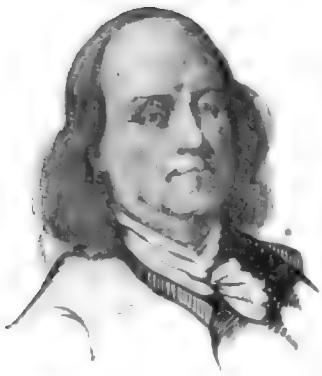
THE WINTON MOTOR CARRIAGE CO.

MEMBER A.L.A.M.

CLEVELAND, OHIO, U. S. A.

CATALOG NO. 2 IS READY

Digitized by Google



BEN FRANKLIN

The great Ben Franklin—drawing lightning from the clouds—identified the world's sources of power; and added to its available energy.

FRANKLIN

"Franklin horse-power" is a new expression and a necessary one. We use it to protect ourselves and the public.

Every automobile buyer ought to know that "Franklin horse-power" is an absolutely different standard from ordinary horse-power. It means more and **does** more—a great deal more.

Twelve "Franklin horse-power" does what would require 20 of other horse-power to do. Twenty "Franklin horse-power" equals 30 of any other. Thirty "Franklin horse-power" equals 45 or more of the average American sort.

This is so because the Franklin engine—bore for bore—delivers more power to the rear wheels than any other automobile motor; and because this power is given full effect by the entire Franklin design and construction.

A bigger charge is admitted to the combustion chamber because of the low temperature produced by the Franklin auxiliary exhaust.

The explosion is consequently **stronger;** and its force is highly concentrated by the small interior surface of the Franklin motor.

The auxiliary exhaust—a port valve at the bottom of the stroke opens before the main exhaust operates; completely **relieving back pressure** and maintaining the temperature combustion chamber at the temperature of highest efficiency.

The immensely large exterior air-cooled **surface** radiates the remaining unused heat with great rapidity.

The **cylinders** are cast to a special analysis of peculiarly **tough, close-grained** iron and are of **uniform** thickness and perfectly seasoned and ground.

There is no such waste of energy in an ordinary motor. No such dissipation of force within the engine as occurs with a large interior surface; no leakage of compression from porous metal or imperfectly fitting pistons. No such extremes of temperature with the consequent ill effects.

The Franklin motor needs no "warming up" to its work. It cannot freeze. It never overheats.

It begins making power from the word "go"; makes it all the time; and delivers it to the rear wheels.

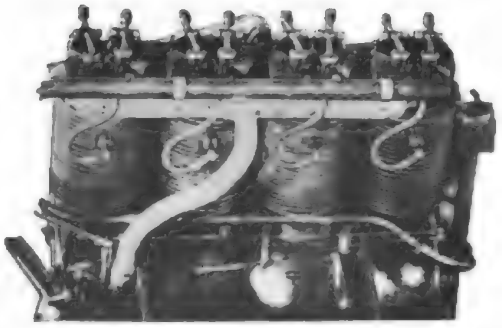
The simple, correct design, the strong, flexible, light-weight construction of Franklin cars, carry into full effect the high power-delivery of the motor; and transform it into a finished ability from twenty to fifty per cent greater than that of any other motor in any other car.

THE MOTOR CAR

Digitized by Google

FRANKLIN MOTOR

Franklin motor-cars—by unexampled refinements of engineering and construction—utilize energy to a degree unequaled in any other cars.



HORSE-POWER

Rated power is an entirely different thing from actual power.

Rating is merely a calculation of what an engine of given size **ought** to do.

Power is what it really does. And that depends upon many things besides its size.

"Franklin horse-power" is what the Franklin engine actually does.

Nearly all the leading American manufacturers, except ourselves, in order to meet the demand for power, are this year building larger and heavier cars, with larger engines and increased horse-power rating.

These ratings (35, 40, 45 and even 50) are honest, but they are decidedly misleading.

Many motorists have been greatly disappointed and they will continue to be disappointed in the performance of their cars, so long as horse-power is graded by figures rather than by ability.

You can to a certain extent get increased power by increasing an engine's size and weight. But this means also increasing the size and weight of the whole car. This cuts down what the power will do and adds to the expense of doing it.

We prefer to keep down the weight and the mere rating of our engines, while we increase their actual power and the actual efficiency of our cars by refined engineering and light, strong, flexible construction.

We thus insure greater comfort, safety and real ability at less expense.

Franklin cars are roomy and capacious. They have no water-cooling complications, weight or trouble. Their wood sills and perfect springs make them easy riding and safe when driven at speed on rough roads.

They are economical of oil, fuel, repairs and particularly, tires.

They not only do more than any other cars of their price; but they do it for far less operating and maintenance cost.

It was a 10 "Franklin horse-power" car that two years ago cut down the record between San Francisco and New York from 61 to 33 days.

No other car has touched this record since, though several of higher rating tried it.

In the famous Long Island two-day Economy contest a 10 "Franklin horse-power" car, carrying four people, won the trophy over ten other cars, all of higher rating —up to 20, 30 and 40 horse-power.

In racing, hill-climbing, touring—no matter what the test is,

Franklins do more dollar for dollar than any other cars.

Rating or ability: which do you want?

A heavy car with a heavy engine to drag it and heavy expense to keep it going,

Or a strong, light-built, powerful car—with every ounce of its energy put into action, doing the same work—and more, on a lower rating for less cost?

If you want to be sure of it, try it at a Franklin dealer's.

Four-cylinder Runabout. Four and six-cylinder TOURING-CARS

Send for Books

H. H. FRANKLIN MFG. CO., Syracuse, N. Y., *M. A. L. A. M.*

OF THE FUTURE

Digitized by Google

You cannot hear the sands of time dropping into space,
Nor the quiet POPE-TOLEDO pass at a mile a minute pace.

More Power **More Room** **More Strength**
More Speed **More Style** **Less Weight**

Our 1906 Type XII, 35-40 Horse Power

"Quiet mile a minute Pope-Toledo." The latest and greatest achievement of the world's largest Automobile plant.

MOTOR consists of four individual twin-head cylinders, 4-cycle copper-jacketed, developing under brake test 43-44 H. P. All gears encased. The VERY REMARKABLE RESULT of securing ONE H. P. FOR EVERY TEN AND EIGHT-TENTHS POUNDS OF WEIGHT HAS BEEN ATTAINED, and this, too, without in any sense sacrificing the strength or wearing parts.

CONTROL is simple, flexible and positive. The car can be driven on HIGH SPEED BEHIND A TEAM WALKING, or up to its MAXIMUM SPEED, simply by the use of throttle and spark, both located on the steering wheel.

TRANSMISSION is of the sliding gear type, having three speeds forward and reverse. Ball bearings at all important points.

BODY DESIGN entirely new and of distinctive appearance.

ORDER NOW FOR EARLY DELIVERY.

In the meantime we have for **IMMEDIATE DELIVERY**

Price, $3,500

Our New Type X, Four Cylinder, 20 H. P. Car

one of the most efficient cars on the market. It is specially designed to meet the demand for a light, wieldy car of great power, which can be easily controlled

Price, $2,800

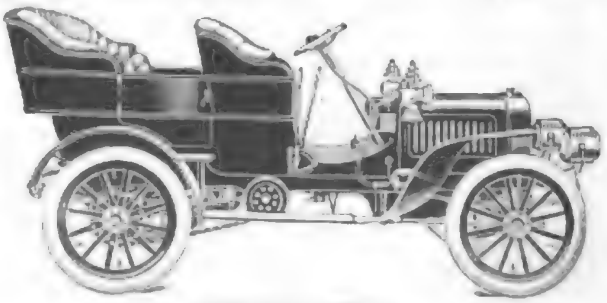
BE SURE THE NAME "POPE" S ON YOUR AUTOMOBILE. Address Dept. A. or catalogue

POPE MANUFACTURING CO.

HARTFORD, CONN.

New York,	1733 Broadway
Boston, Mass.,	223 Columbus Ave.
Washington, D. C.,	819 14th St.
San Francisco, Cal.,	451 Mission St.

A. L. A. M.



TYPE X. $2800

Digitized by Google

About this time every year you begin to see little news items like the following in the "For Sale" columns:

> FOR SALE—1905 Model ———— car, delivered last May; used only six months, run about 3,000 miles. Just been thoroughly overhauled; three new tires on car; 3 extra tires (re-covered), 6 extra inner tubes. Cost $3,000, price $1,800. Only reason for selling is that I have ordered one of their next year's models.

Now, there is quite a bit of information not printed in so many words in this ad, but which can still be picked out by Mr. Keen Buyer if he's a mind to. So let's analyze and see what more we can learn.

First. The car has cost the owner $1,200 (the difference between what he paid for it and what he **thinks** he can get for it) in the short space of **six months**, for the single item of **Depreciation.** This is an average of **$200 a month.**

Second. He has had to buy six extra tires and six inner tubes, which at $50 per tire and $10 per tube totals some $360—an average of $60 per month.

Third. The car needed a "thorough overhauling" after only six months' use. This overhauling probably cost $200 (mainly because everything was so inaccessible). This is an average of $35 per month, in addition to the bills for current repairs which came in every 30 days and which averaged, say, $25 (and that's letting some men off **easy**).

Fourth. Excluding gasoline and other supplies, and not allowing anything for a chauffeur's salary, the above items work out to $200 plus $60 plus $35 plus $25, which is over $320 a month—which for 500 miles service per month works out to **nearly 65 cents a mile.** Startling, isn't it?

After getting this far, Mr. Keen Buyer decides that a car that needs a thorough overhauling after only six months' service of 3,000 miles isn't what might be termed a **durable** car.

He decides that six tires and six inner tubes for 3,000 miles is much too many. (The ad doesn't state how many more were too far gone to be re-covered and were thrown away, but we'll let that go.)

And it strikes him that $200 a month is entirely too much to charge off for depreciation; that **if the maker didn't bring out a new model every year,** a man might use his car more than one short six months without having to sacrifice it in order to avoid the stigma that attaches itself to the owner of an "out-of-date" car. Then he could save about $150 of this $200. He further figures that while tires are expensive, and repairs too, **yet both are insignificant expenses when compared to this Depreciation item.**

Now when Mr. Keen Buyer learns that the Stevens-Duryea Stanhope is being built for **its fifth year** without change in its looks, power or price, he is interested. When he learns that the same policy is being carried out with the four-cylinder Stevens-Duryea, he is apt to sit up and take notice. If he writes for further information he will learn that the Stevens-Duryea is so built that the "thorough overhauling" every six months isn't part of its routine. And he will also learn that the **average tire bills on 300 of these cars sold up to September 1 have been less than 45 cents per car per month.** When he learns that **less than one in five** of the Stevens-Duryea owners are employing chauffeurs, when he looks in the "For Sale" columns and fails to find any four-cylinder (and mighty few two-cylinder) Stevens-Duryea cars for sale, although some 350 of the latter are in use, when he makes a trip around to the various agents in his city and finds that none of them have a four-cylinder Stevens-Duryea for sale second-hand, showing that they have not been able to get any Stevens-Duryea owner to like their cars enough better to "trade"—well, we've got to stop, but just one word more: Get our printed matter and find out why the Stevens-Duryea seems to have hit it off so well with the owners.

J. STEVENS ARMS & TOOL CO.

Makers of the Twentieth Century Hustler

705 MAIN STREET CHICOPEE FALLS, MASS.

Member Association Licensed Automobile Manufacturers

Digitized by Google

MITCHELL

"The car you ought to have, at the price you ought to pay."

Our 1906 Line includes the Following Models:

Runabout

Model 2 B, 2-cylinder 8-10 horse-power, vertical motor, mounted in front . . . $750

Touring Car

Model 4 B, 4-cylinder 18-20 horse-power $1500

Also a tip top Commercial Line and two new models, the announcement of which at an early date will sensationalize the trade.

We cannot take care of many more new agents, but a few GOOD ones—YES.

WRITE

MITCHELL MOTOR CAR CO.

RACINE, WIS.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS ASSOCIATION, CHICAGO

Digitized by Google

Locomobile

Easily the Best Built Car in America

Our announcement of 1906 models with specifications, will appear in the next issue of this publication.

An illustrated folder giving much information of interest to prospective purchasers of high grade four-cylinder touring cars, will be sent on application.

The Locomobile Company of America, Bridgeport, Conn

Member Association Licensed Automobile Manufacturers

NEW YORK, 76th St. and Broadway
BOSTON, 15 Berkeley St.
PHILADELPHIA, 249 N. Broad St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

Oldsmobile Model S

¶ Following our more general announcement of last week, we have set forth in detail the leading features of our Four-cylinder Touring Car.

¶ In general appearance this car is strictly up-to-date. The front axle has been placed well forward under the radiator, giving a wheel base of 106 inches. The standard tread is 55 inches; but either 52-inch or 58-inch tread will be furnished to order. The general design of the car is such that the tendency is slip on short turns running is very small. Weight of car 2,000 pounds.

Price $2250.

Front section of the Oldsmobile Four-cylinder Touring Car

Motor.—The car is equipped with a four-cylinder vertical motor, cylinders 4½ inches bore by 5 inches stroke, developing 24 horsepower at 1,000 revolutions per minute. The cylinders are cast in pairs, and each is provided with two valves, the inlet valve and cage are made from the best grade of cast iron and the exhaust valve and cage from semi-steel. The valves are 2 inches in diameter and are interchangeable.

Ignition.—The ignition is by jump spark, current supplied by a splash magneto. The top of the magneto is enclosed, and no liquid is allowed to enter the case. The magneto is driven by a silent chain from the crankshaft. The timer is of the automatic type, and is driven by a silent chain from the magneto shaft. The spark coil is mounted by means of screws and secured to a post system. The coil is of the vibrating type, and is provided with a switch for cutting out the spark when desired. The spark plugs are of the Champion type, and are interchangeable.

Transmission.—The transmission is of the selective type, and is provided with three speeds forward and reverse. The gears are of nickel steel, and are cut from the solid blank. The shafts are of nickel steel, and are mounted in ball bearings. The transmission case is of aluminum, and is provided with a removable cover for convenience in inspecting the bearings of the shafts.

OLDSMOBILE

Frame: A pressed steel frame of channel section is ed. In addition to the main frame, a sub-frame is pro- led which supports the motor and radiator. A portion the dust pan which runs under the car is riveted between outside and inside members, and gives a pronounced icing effect. A portion of the dust pan is removable, so it the motor may be very easily examined, yet at the same ne it is firmly fastened when in place and absolutely pre- nts the dust, mud and water from reaching the working rts of the mechanism. Both engine and transmission are gned upon the sub-frame, and all working parts may be noved without disturbing the hanging of the crank, or nsmission cases.

Transmission: The transmission is of the sliding gear pe, having three speeds forward and one reverse. All gears are made of special high carbon steel, tempered l hardened. **The control is of the selective type, all anges being made with one lever.**

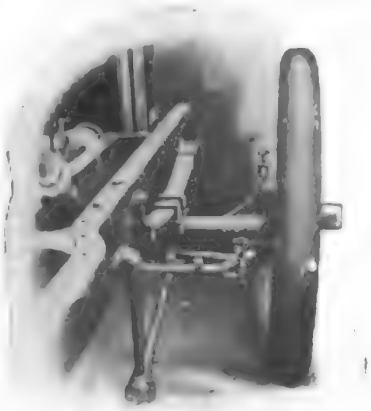
The clutch is of the "dish pan" or cone type, and is ovided with a simple spring device whereby the load may thrown on the motor gradually, thus doing away with y jerking motion when starting. The clutch may be own out by foot lever, and also by emergency brake er.

Control: Steering is accomplished through a worm and t mechanism. The nut has a large wearing surface so obitted that same may be easily replaced at any time. e spark and throttle levers are placed upon the steering t, and just beneath and at the right-hand side of a 16- h oval-rim steering wheel, An accellerator pedal is also anged in such a way that it may be used with ease when s desired to instantly increase the speed for a short erval.

Brake: There are two brakes; one, operated by a pedal trol, acting on the cardon shaft, just back of the trans- sion case; the other, operated by a hand lever, which ts up" the emergency toggle joint brake upon the rear eels. Application of this latter brake throws out clutch, connecting transmission from motor.

Axles: The front axle is of our own special design, is built of 2-inch tubing, having a ¼-inch wall. The ering connections have special large bearings, all these rings being equipped with "T" handled grease cups, protected by leather dust caps. The steering connec- ns and gear links are adjustable so that the wheels may easily lined up at any time. Axle is dropped in center protect the fly wheel and other parts beneath the car. The rear axle is equipped with Timken roller bearings throughout.

Drive: Bevel-gear drive is used, having a ratio of 3 to 1. Ratio of 3½ to 1 or 4 to 1 will be furnished on special order. We do not recommend any lower than 3½ to 1.



Showing the Steering Mechanism

Springs: Large, half-elliptical springs made of the best stock obtainable are used, the front being 36 inches long, and rear 48 inches.

Miscellaneous: The wheels have ten spokes in front, and 12 in the rear, and are equipped with 32-inch by 3½-inch tires. Four-inch tires for extraordinary service can be had on special order. Running board and mud guard irons, instead of being riveted on are drawn into taper sockets upon side members of frame and are easily remov- able. The lamp brackets are adjustable for different sizes of lamps; dash and tail light brackets are supplied. Lug- gage rack is equipped at rear on special order. A tubular horn, two acetylene head lights, generator and two oil lamps are furnished with each car. A box carried on running board contains storage and dry cells, tools and compartment for waste and small repairs.

OLDS MOTOR WORKS

LANSING, MICH., U. S. A.

EAD AND LET THESE FACTS SOAK IN!

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

indly send me information regarding cars checked. interested.

el B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

e _____

ress _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for fram- ing) for 1906. Design by George Gibbs. 11

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. 11

Name _____

Address _____

Digitized by Google

SOLAR LAMPS

THEY CUT LIKE A KNIFE THROUGH THE GLOOM AND DARKNESS

EVERY MAN WHO DRIVES AT NIGHT MUST HAVE A GOOD CAR AND A BETTER LIGHT

LET THE SOLAR LIGHT YOUR WAY

THAT'S THE SOLAR

GET OUR BOOKLET OR ASK YOUR SUPPLY MAN

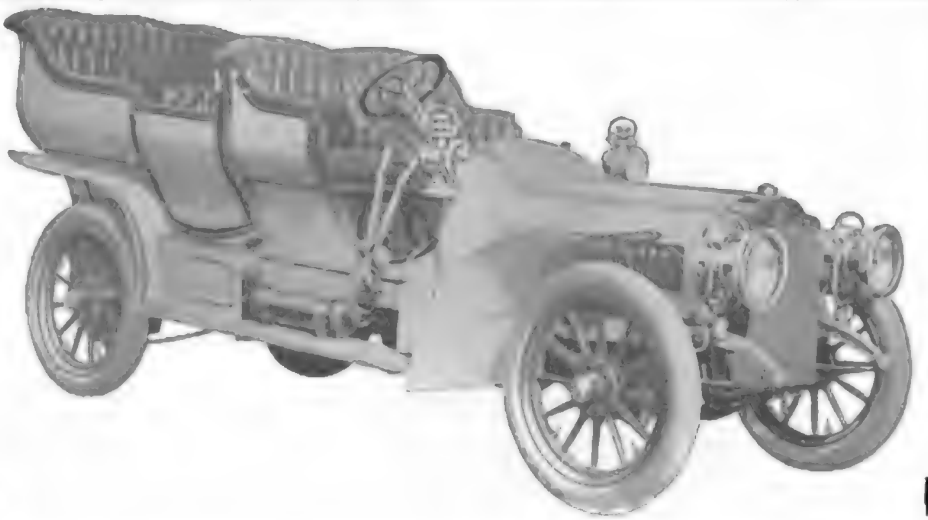
BADGER BRASS MFG. CO.
KENOSHA, WIS.

NEW YORK OFFICE, 11 WARREN ST.

Digitized by Google

The New Thomas

Greatly Exceeds My Most Sanguine Expectations Experts Say It Is a Wonder



NO customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level, and climbs a 10 per cent grade on the high speed at forty miles per hour, within an hour after it first leaves the shops, it is something that not one car in a thousand will do.

Under favorable conditions we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill-climbing, quiet operations and mechanical superiority, and cordially urge disinterested automobile experts everywhere to rigidly investigate our claims, and compare our material, workmanship and design with the highest-priced cars in the world—we will win the verdict.

E. R. THOMAS.

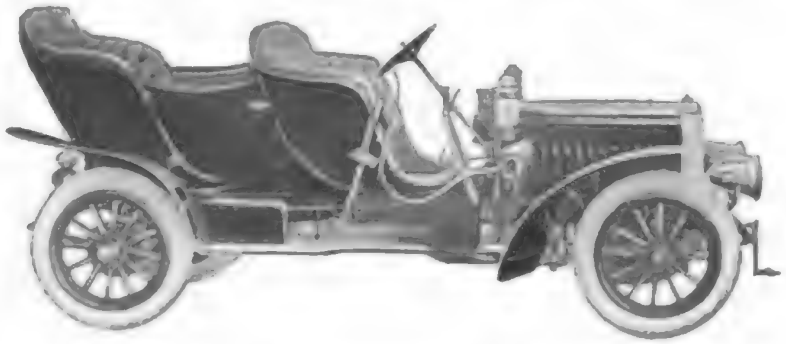
For the E. R. THOMAS MOTOR CO., Buffalo, N. Y

E. R. THOMAS MOTOR COMPANY

417 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google

The Queen



One of Our Three New Models

MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS—All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

Digitized by Google

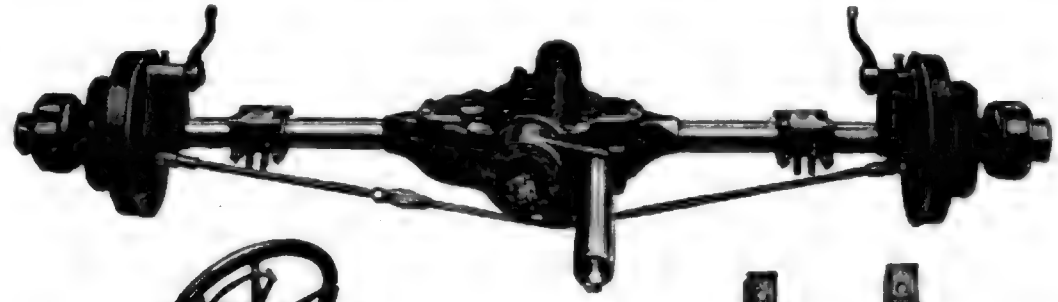
GARFORD
TOURING CAR PARTS

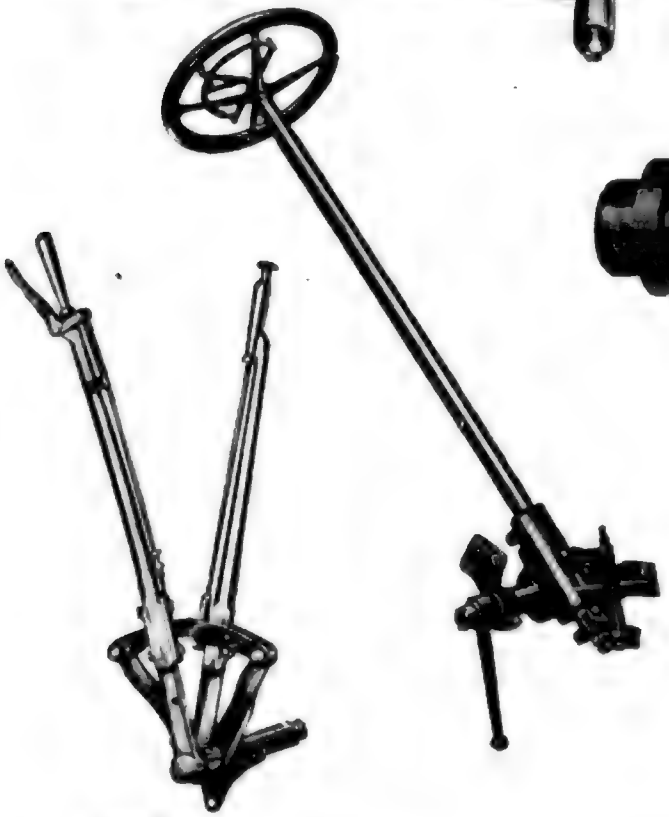
We don't wait for customers to test our parts before ascertaining if they are suitable for high grade touring cars. The model cars our engineers operate are given such severe service that the dependabiltty of each piece is known to us in advance. Experiments are conducted at our own expense and risk. *Write for Circular No.12.*

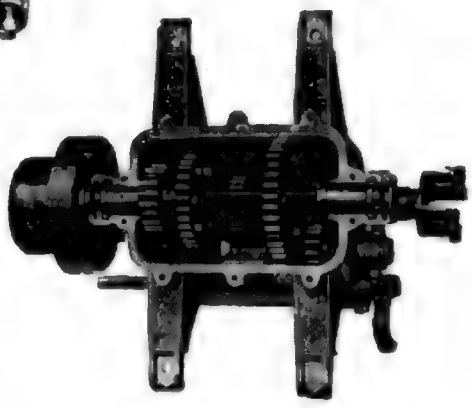
One size for cars weighing up to 2,400 lbs., and of 30 H.P. Other size for cars weighing up to 2,800 lbs., and of 50 H.P.

The Garford Company—Elyria, Ohio

SALES MANAGER—HAYDEN EAMES, AMERICAN TRUST BUILDING, CLEVELAND

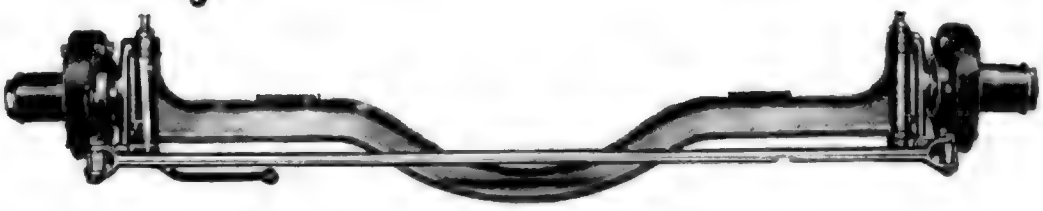






GARFORD PARTS

REAR AXLE, Ball or Plain Bearing
FRONT AXLE, Ball or Plain Bearing
CHANGE GEAR
STEERING GEAR
CLUTCH
PROPELLER SHAFT
DISTANCE ROD and Bracket
LEVERS for Emergency Brake and Change Gear

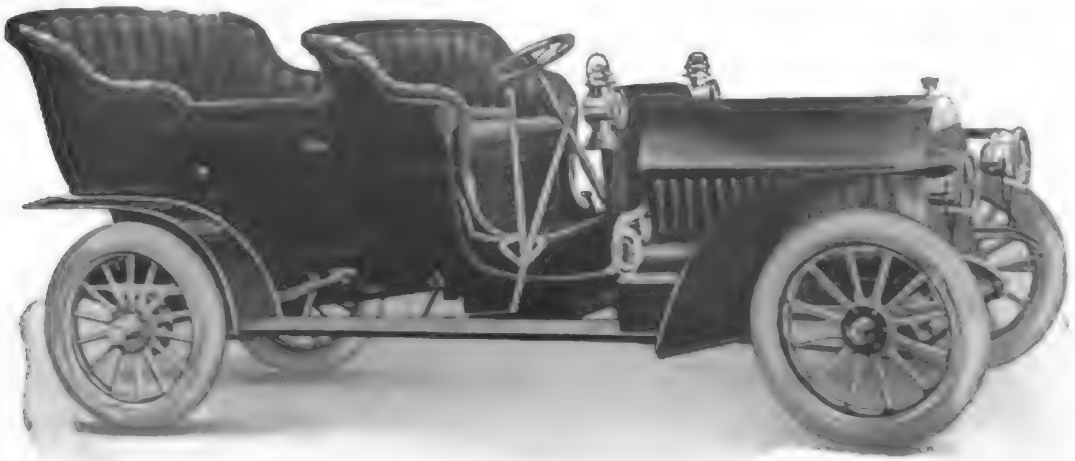


Digitized by Google

Wayne

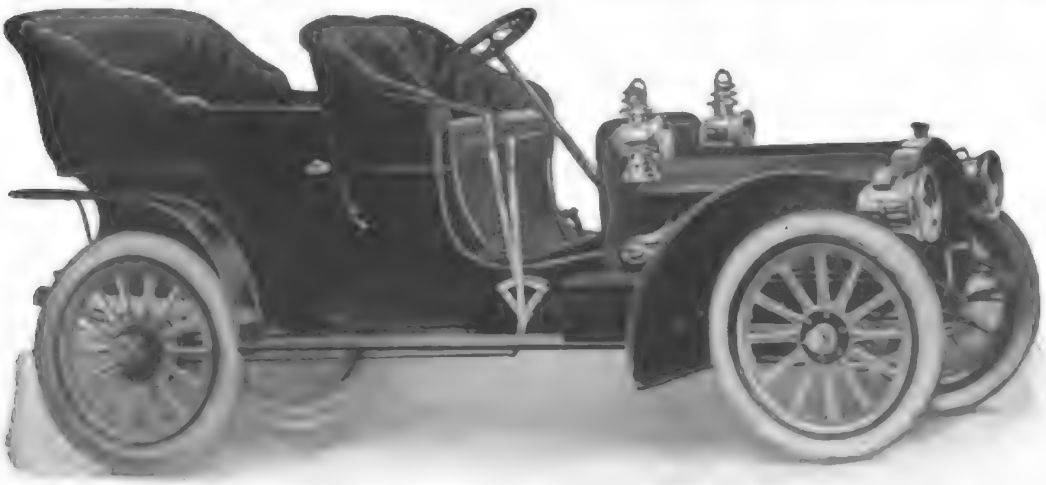
An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



Wayne Model F $3500

MOTOR, 4 cylinder vertical, cylinders 5½ x 5 cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, I beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34 x 4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights with generator, tail lamp and tube horn.



Wayne Model K $2500

MOTOR, 4 cylinder vertical, cylinders 4¼ x 5 cast in pairs and water cooled. Engine develops by brake test 35 H.P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles some type as Model F. TIRES, 32 x 4. EQUIPMENT, same as Model F.

Digitized by Google

Wayne

Wayne Model H
$6500
Ten Passenger Roadster

Motor—Four cylinder, vertical, cast en bloc, 4½ inch bore, 5 inch stroke, 381 cubic inches piston displacement. Cylinders—Cast en bloc. Valves—Mechanically operated, all on one side. Ignition—Dual, Bosch high tension magneto and storage battery. Carburetor—Kingston. Cooling—Water, pump circulation. Lubrication—Splash. Transmission—Selective sliding gear, three speeds forward and reverse. Clutch—Multiple disc. Drive—Shaft. Rear Axle—Full floating. Steering Gear—Worm and sector. Brakes—Two internal expanding on rear wheels, one external contracting on drum attached to transmission. Wheels—Artillery. Equipment—Top, windshield, speedometer, electric lights, electric horn, tools and tire carrier. Wheelbase—130 inches. Tires—34 x 4 inches.

The strong features as well as the extreme simplicity and accessibility of the engineering construction. The comfort and luxurious appointments of the body are in keeping with the high class of automobile it has to show.

Wayne Model C
$1285

WAYNE—Eighty special six-cylinder touring car, with wheelbase 124 inches. Engine is large, under the double opera seat, developing 60 horsepower. Motor—Six cylinder, vertical, cast en bloc, 4 inch bore, 5 inch stroke, 452 cubic inches piston displacement. Cylinders—Cast en bloc. Valves—Mechanically operated, all on one side. Ignition—Dual, Bosch high tension magneto and storage battery. Carburetor—Kingston. Cooling—Water, pump circulation. Lubrication—Splash. Transmission—Selective sliding gear, three speeds forward and reverse. Clutch—Multiple disc. Drive—Shaft. Rear Axle—Full floating. Steering Gear—Worm and sector. Brakes—Two internal expanding on rear wheels, one external contracting on drum attached to transmission. Wheels—Artillery. Equipment—Top, windshield, speedometer, electric lights, electric horn, tools and tire carrier. Wheelbase—124 inches. Tires—34 x 4 inches.

Detroit Automobile Show, 251 Woodward Avenue, Detroit. **Wayne Automobile Co., Detroit, Mich.**

Also Touring Car and Roadster, Wheelbase 130 inches, Model H, $6500

Latest Thing

No. 13. Gas Headlight.

No. 12. Gas Headlight.

If you are a maker of high grade cars why equip them with old style Lamps, the most of which can be said for them is that they are Brass, and well burn (some). You have to pay about as much, why not have the latest and up-to-date Lamps.

Our new factory is the largest and most complete in the United States.

ATWOOD MFG. CO.

ANSONIA, CONN.

Digitized by Google

NIP AND TUCK

For 83 miles, during the running of the world's record 100 mile race for stock cars, at Indianapolis, Nov. 4, two 1906

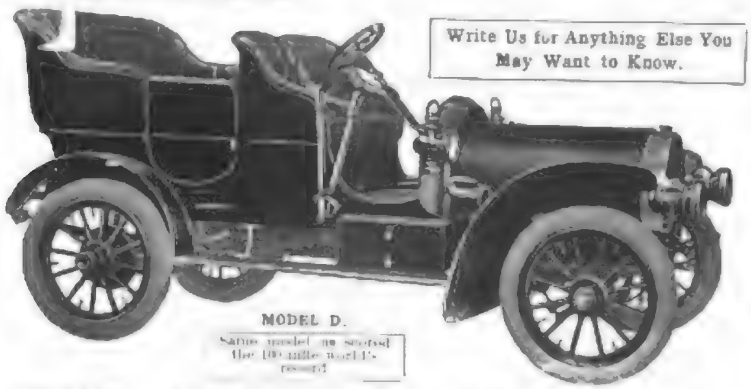
National

cars ran neck and neck, at no time being more than 50 feet apart.

Other cars in the race were left miles and miles behind, but neither of the two Nationals could pull away from the other. Talk about

UNIFORM RELIABILITY in CONSTRUCTION

here was a demonstration stronger in its simple consistency than all the theoretical argument in the world. Just run your eye down that column of times for each mile of that flying century, and then if you think we have **proved all** that every man wants in a motor car, i. e., uniformity of performance and reliability of construction



Write Us for Anything Else You May Want to Know.

MODEL D.

Same model as stood the 100-mile world's record

OUR 1906 LINE IS READY

NATIONAL MOTOR VEHICLE CO.

1006 East 22d Street, INDIANAPOLIS, IND.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS ASSOCIATION, CHICAGO

LOOK AT THE TIME OF EACH MILE

Miles	Elapsed Time H. M. S.	Time Single Miles Min.
1	1:19 2-5	1:19 2-5
2	2:28	1:08 3-5
3	3:36 2-5	1:08 2-5
4	4:44 1-5	1:07 4-5
5	5:52 1-5	1:08
6	7:00	1:07 4-5
7	8:08 1-5	1:08 1-5
8	9:16 2-5	1:08 1-5
9	10:24	1:07 3-5
10	11:31 3-5	1:07 3-5
11	12:39 1-5	1:07 3-5
12	13:46 2-5	1:07 1-5
13	14:53 1-5	1:06 4-5
14	16:01 2-5	1:08 1-5
15	17:08 4-5	1:07 2-5
16	18:16 3-5	1:07 4-5
17	19:25	1:08 2-5
18	20:32 3-5	1:07 3-5
19	21:40 1-5	1:07 3-5
20	22:48 2-5	1:08 1-5
21	23:56 1-5	1:07 4-5
22	25:04	1:07 4-5
23	26:12 2-5	1:08 2-5
24	27:21 4-5	1:08 2-5
25	28:28 2-5	1:07 3-5
26	29:36 2-5	1:08
27	30:44 3-5	1:08 1-5
28	31:52 1-5	1:08 3-5
29	33:00	1:07 4-5
30	34:08	1:08
31	35:16 4-5	1:07 4-5
32	36:23 4-5	1:08
33	37:31 4-5	1:08
34	38:40	1:08 1-5
35	39:48 2-5	1:08 2-5
36	41:57 4-5	1:09 2-5
37	42:05	1:07 1-5
38	43:12 4-5	1:07 4-5
39	44 21	1:08 1-5
40	45:28 3-5	1:07 3-5
41	46 36 2-5	1:07 4-5
42	47:44 1-5	1:07 4-5
43	48:52 1-5	1:08
44	50:01	1:08 4-5
45	51:08 3-5	1:07 3-5
46	52:16 4-5	1:08 1-5
47	53 25 1-5	1:08 2-5
48	54:33 1-5	1:08
49	55 46 4-5	1:07 3-5
50	56:48 3-5	1:07 4-5
51	57 56 2-5	1:07 4-5
52	59:04 3-5	1:08 1-5
53	1 00 12 4-5	1:08 1-5
54	1 01:21	1:08 1-5
55	1:02:29 3-5	1:08 3-5
56	1:03:38 2-5	1:09
57	1:04:47 1-5	1:08 3-5
58	1:05:56	1:08 4-5
59	1:07:03 4-5	1:07 4-5
60	1:08:12 2-5	1:08 3-5
61	1:09:21	1:08 3-5
62	1 10:29 2-5	1:08 2-5
63	1:11 37 2-5	1:08
64	1:12:45	1:07 3-5
65	1:13:53 1-5	1:08 1-5
66	1 15 01 1-5	1:08
67	1:16:09	1:07 4-5
68	1:17 17 1-5	1:08 1-5
69	1:18:25 1-5	1:08
70	1:19:33 2-5	1:08 1-5
71	1:20:41 1-5	1:07 4-5
72	1:21:49	1:07 4-5
73	1:22:57 1-5	1:08 1-5
74	1:24:05	1 07 4 5
75	1:25:13 1-5	1:08 1-5
76	1:26:20	1:06 4-5
77	1:27:26 4-5	1:06 4-5
78	1:28:33 2-5	1:06 3-5
79	1:29:39 4-5	1:06 2-5
80	1:30:46 1-5	1:06 2-5
81	1:31:52 4-5	1:06 3-5
82	1:33:00	1:07 1-5
83	1:34:07 3-5	1:07 3-5
84	1:35:22 1-5	1:14 3-5
85	1:36:31	1:08 4-5
86	1:37:39	1:08
87	1:38:48 1-5	1:00 1-5
88	1:39:58 1-5	1:10
89	1:41:07	1:08 4-5
90	1 42:14	1:07
91	1:43:21	1:07
92	1:44:28	1:07
93	1:45:34 3-5	1:06 3-5
94	1:46:41	1:06 2-5
95	1:47:47 4-5	1:06 4-5
96	1:48:54 1-5	1:06 2-5
97	1:50:02 1-5	1:08
98	1:51:07 2-5	1:05 1-5
99	1:52:14 2-5	1:07 1-5
100	1:53:21 4-5	1:07 2-5

Digitized by Google

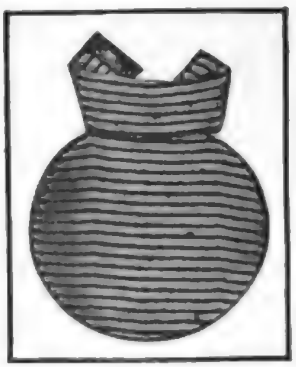
WAY'S MUFFLER

A Sure Guarantee Against Colds

Especially adapted for Fall and Winter Automobiling

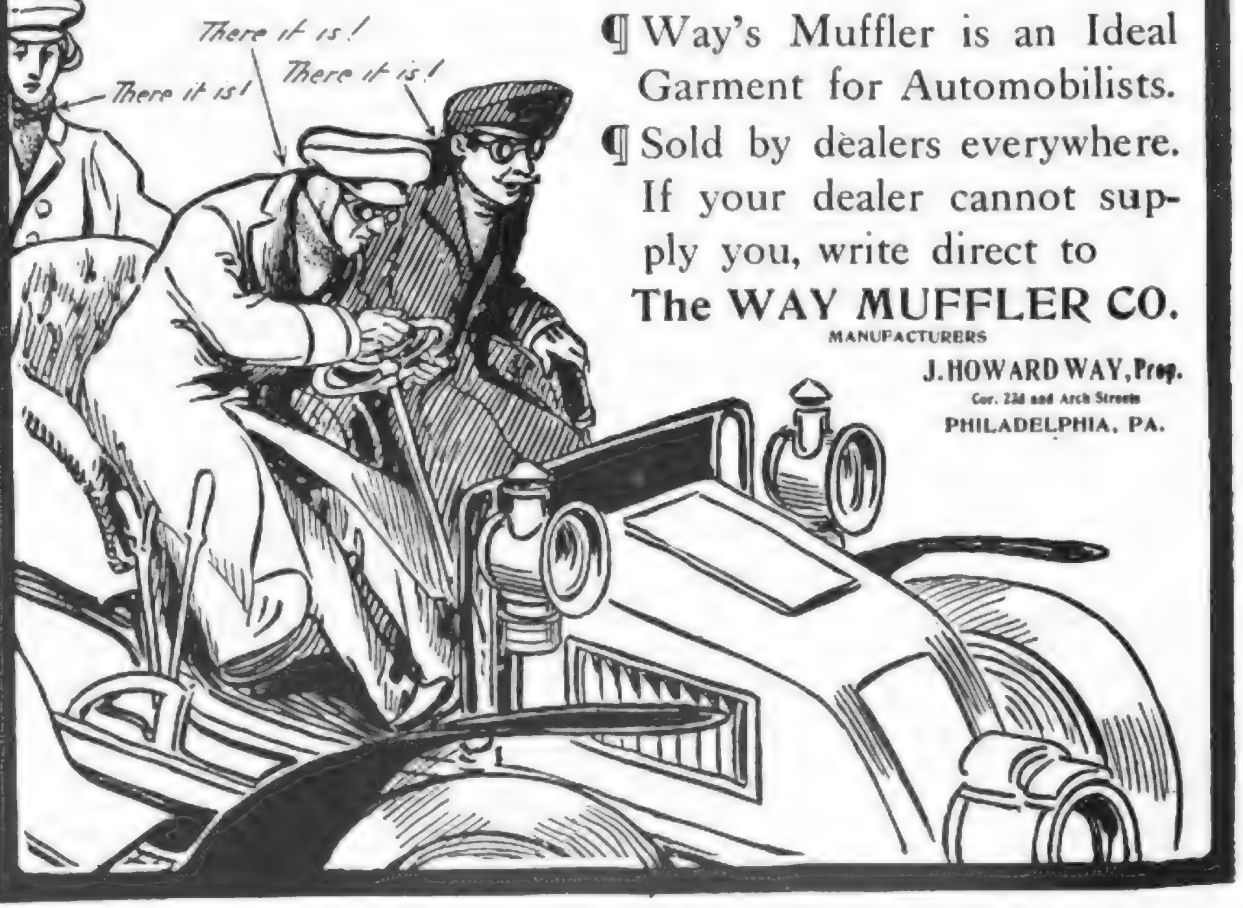
A Perfect Throat and Chest Protector

For Men, Women and Children



EASY TO PUT ON AS YOUR HAT

Made with or without ear-tabs



¶ Way's Muffler is an Ideal Garment for Automobilists.

¶ Sold by dealers everywhere. If your dealer cannot supply you, write direct to

The WAY MUFFLER CO.

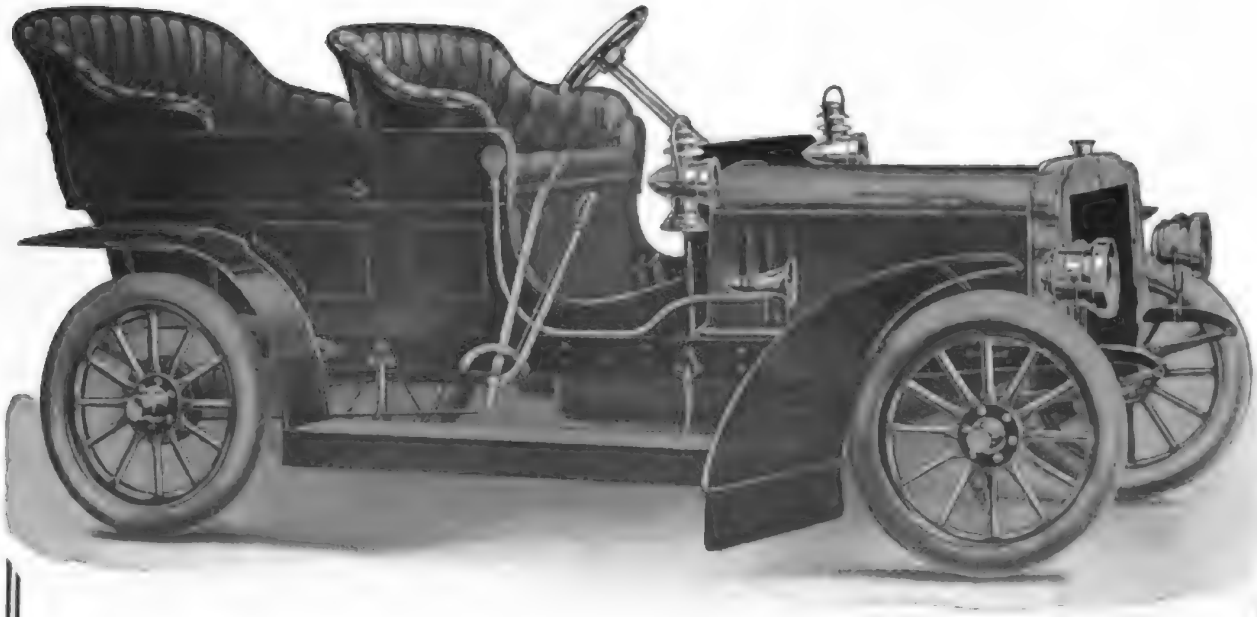
MANUFACTURERS

J. HOWARD WAY, Prop.

Cor. 22d and Arch Streets

PHILADELPHIA, PA.

Digitized by Google



1906 Ford 6-Cylinder Touring Car

Price $2,500

6 cylinder—40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2,000 pounds.

1906 Ford Runabout, as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show. ... ...

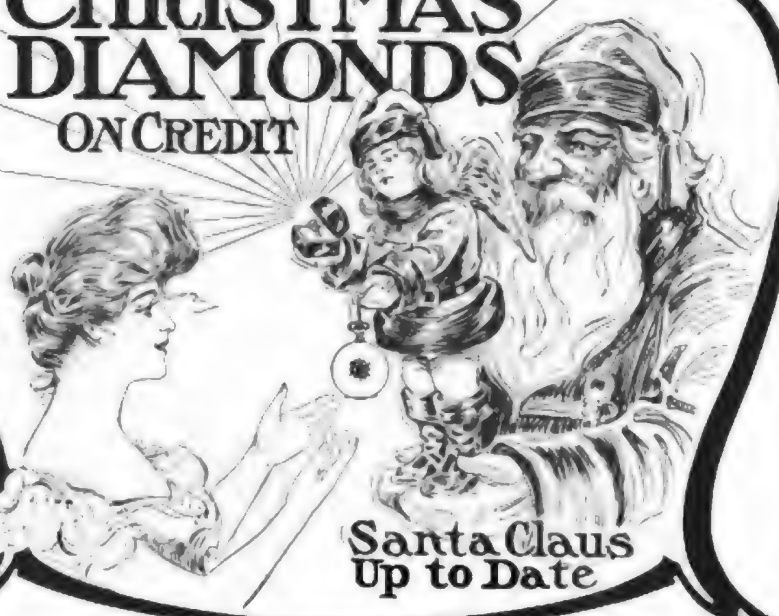
Ford Motor Company

Detroit, Mich.

Member American Motor Car Manufacturers Association, Chicago

Canadian Trade Supplied by the Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

CHRISTMAS DIAMONDS ON CREDIT



Santa Claus Up to Date

Love Is the Real Santa Claus

It is our love for our dear ones that makes Christmas a truly Happy Season, and that brings to one and all the joys of a Christmas remembrance.

The Loftis System at Christmas Time

Is a great and Timely Convenience to thousands, as it enables persons in all circumstances to make beautiful and appropriate Christmas Gifts. Everyone at Christmas Time is anxious to give their loved ones handsome Christmas Presents, but it is not always convenient. THE LOFTIS SYSTEM of Credit MEANS CONVENIENCE. That is the only way in which it differs from a cash transaction. There is no delay, no security, no publicity. It simply means a matter of confidence and convenience to honorable people. Write Today for Our Handsome Christmas Catalogue.

You Are Welcome to Credit whether you are a moderate salaried employee or a wealthy employer. The Loftis System makes any honest person's credit good by adjusting terms to meet their earnings or income. Do not think that you must give a cheap, ordinary present because you can only spare a few Dollars just now. With five or ten Dollars for a first payment you can give a beautiful Diamond which will last forever, enhance in value and continually bring pleasant thoughts of the giver's generosity.

Our Handsome Christmas Catalogue is resplendent with thousands of beautiful Jewelry suggestions for Xmas Gifts. Diamond Rings, Pins, Brooches and Earrings, Chatelaine Watches, Silverware, etc., for Wife, Sweetheart, Sister or Mother. Sparkling Diamond Studs, Scarf Pins and Cuff Buttons, Watches, Match Safes, Fobs, etc., for Husband, Father or Brother. With its aid you can select, in the privacy of your own home, suitable Gifts for all, both old and young. May we not have the pleasure of sending you a copy?

True Merit Wins! In competition with the entire world (both the United States and foreign countries) at the St. Louis World's Fair, our Goods, Prices, Methods and Terms won the Gold Medal, the highest award. No stronger endorsement of THE LOFTIS SYSTEM could be given.

This, together with the fact that we are the largest and oldest established Jewelry House in the United States, and that we refer you to any bank anywhere or any commercial agency as to our reliability and standing should interest you in our liberal offer to send you our Handsome Christmas Catalogue and to extend to you our most liberal terms as an aid to you in making Christmas a truly Happy season. Write today for Catalogue.

Do Your Christmas Shopping Now. Let us suggest that you do your Christmas Shopping now, conveniently and leisurely in the privacy of your own home. Select from our Handsome Catalogue the articles you desire and we will send them to you for examination and approval. If satisfactory retain them, paying one-fifth the cost and the balance in eight equal monthly payments. If not, return to us. We take all risks and pay all express charges. Now is the time to secure the choice selections and have ample time to inspect the goods. All orders filled promptly. Write Today for Our Christmas Catalogue.

There is no better investment than a Diamond. They have increased in value more than twenty per cent during the past twelve months and Diamond experts predict an even greater increase during the coming year. Write today for Our Christmas Catalogue.

LOFTIS BROS & CO. ESTD 1858

DIAMOND CUTTERS
Watchmakers, Jewelers
Dept. M560 92 State Street
CHICAGO, ILLINOIS, U. S. A

The New Model 1906

Rainier

30-35 H. P.

What is the automobile buyer going to do when he is strenuously told that each and every one of the 1906 cars is THE BEST CAR IN THE WORLD.

He is going to do a little investigating.

He is not going to be attracted nor distracted by the whirlwind of words with which one car after another comes before the public on paper.

When he gets down to business, he will find the RAINIER in the front rank of cars that have won renown and made fast friends by actual achievement. He will find that in every inch of metal and wood, in every working part, in every line, the Rainier as it will take the road in 1906 is the very embodiment of strength, compactness, lightness and beauty—now more than ever "The Pullman of Automobiles."

We want good Rainier agents in all unassigned territory. We can give them a car to sell that WILL sell, and that will make a new salesman of every purchaser. We stand back of the Rainier with the broadest and most liberal guarantee ever given.

Correspondence invited.

ENGINE.	30-35 H. P., 4 cylinders, water cooled.	**TIRES.**	Continental 34x4.
IGNITION.	Sims-Bosch Magneto make and break spark	**VALVES.**	Mechanically operated, inlet and exhaust interchangeable.
TRANSMISSION.	Sliding train. 3 speeds forward and one reverse.	**CARBURETER.**	Float feed, requiring no adjustment.
REAR AXLE.	Bevel gear drive, clutch driven hub. Ball bearings.	**BRAKES.**	Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
FRONT AXLE.	I Beam section. Ball bearings.		
FRAME.	Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.	**BODY.**	Full aluminum, double side entrance.
WHEEL BASE.	106 inches.	**EQUIPMENT.**	Two head lights, 2 side lights, 1 rear light, 1 horn.
WHEELS.	Imperial whalebone, grade A 2d growth hickory.		

Price, $4,000

The 22-28 H. P. will be continued as heretofore, without any changes.

4 cylinders—98 inch wheel base—La Coste coil. French battery. Continental Tires. Aluminum side door body.

Price, $3,500

BOTH MODELS GUARANTEED FREE OF REPAIRS FOR ONE YEAR

The world's broadest and most liberal automobile guarantee.

Landaulet bodies for immediate delivery. Limousines for November and December delivery.

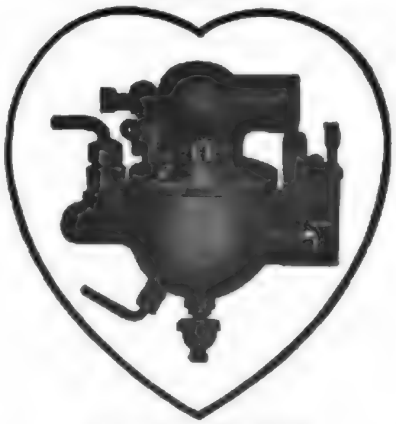
THE RAINIER COMPANY, Broadway, Cor. 50th St., **New York**

Boston Agents: **MORRISON-TYLER MOTOR CO.**

Good Agents wanted in unassigned territory.

Digitized by Google

THE HEART



OF THE AUTOMOBILE

The Schebler Carbureter

STANDARD OF THE WORLD

Eighty-two automobile and marine engine builders in the United States and Canada have adopted the Schebler. All the carbureter manufacturers in America cannot show this record.

Seven sizes from ½" to 3".

Schebler carbureter with balance throttle to be used with a governor.

Schebler two-cycle engine carbureters.

Schebler Special for Cadillacs.

Oldsmobile carbureters.

Ford two-cylinder carbureters.

Autocar Runabout carbureters.

Franklin Automobile carbureters.

Standard sizes for all other motors.

Special fittings for attaching the Schebler to above cars.

Agencies in all the principal cities of the world

F. H. WHEELER

Manufacturer and Sales Agent

Indianapolis, Ind., U.S.A.

LIST OF AGENCIES.

P. J. Dasey.....431 Wabash Ave., Chicago, Ill. Factory Rep.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, Rhode Island
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Elec. Supply Co.....Washington, D. C.
Automobile Equipment Co.....Detroit, Mich.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station....3425 N. Broad St., Phila., Pa.
Auto Supply Agency.....3939 Olive St., St. Louis, Mo.
R. P. Bayley & Co.....New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chanslor & Lyon Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Neil & Co.....88 Fenchurch St., London, England.

A Mild Comparison

A comparison of the record of the "HAYNES" car in the elimination race for the Vanderbilt cup, with that of far more powerful cars that were allowed to enter the real race

—is most interesting.

Get a record of the two events

—and compare.

Put the "HAYNES" Elimination record beside the records of some of the other cars in the real race *—and compare.*

Study what the "HAYNES" Car *did,* and what some of the others *didn't do—and compare.*

A few live agents wanted, in a few sections. WRITE QUICK.

We are booking orders for exact duplicates of our Vanderbilt entry, in the order of their receipt. Write us about it.

The Haynes Automobile Company

Kokomo ... Indiana

NEW YORK Members A. L. A. M. CHICAGO

Digitized by Google

Congratulations

From a dealer in a rough-road country on the service obtained from

GOODRICH TIRES

WITH THE BAILEY TREAD

"We wish to congratulate you because of the splendid way your Goodrich-Bailey Tires have given satisfaction and service to us and our customers. They not only wear longest with the least show of use, but seem to be free from weak spots, such as fabric breaks and rubber and fabric parting company on the Tread, *the latter seems to be a sure thing on some tires that we know of.*

We are looking to 1906 Goodrich and expect to be partial to them because we believe they deserve it, if their previous reputation is any criterion to go by."—*Ashville Cycle and Auto Company, Sept. 23, 1905.*

THE BAILEY "WON'T SLIP" TIRE Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, slewing or skidding.

Rims branded in the channel with this copyright mark have been inspected and pronounced perfect. We guarantee our tires only on rims so branded.

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1805 Broadway
Buffalo, 731 Main St. Cleveland, 410 Superior St.
San Francisco, 308 Mission St. Chicago, 141 Lake St.
Boston, 161 Columbus Ave. Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

CADILLAC UTILITY

The single-cylinder Cadillac
will climb any hill that any automobile will climb.

The single-cylinder Cadillac
will travel as fast as anybody ought to ride.

The single-cylinder Cadillac
will travel any road that any automobile will travel.

The single-cylinder Cadillac
Costs less to operate
Costs less to maintain
Requires less attention
than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined and won for them the unquestioned distinction of

America's Leading Motor Cars

CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

Member Association Licensed Automobile Manufacturers.

Digitized by Google

REASON FOR RECORDS

G & J

TIRES

On Saturday, Nov. 4, at the Indianapolis Fair Ground race track, Jap Clemens drove a regulation stock

NATIONAL

car, equipped with

G & J TIRES

100 MILES

in the World's Record Time

1:53:21 4/5

From start to finish not one moment was lost on account of tire trouble of any nature

NO TIME IS EVER LOST BY USERS OF G & J TIRES

Every Event at the Indianapolis Meet was won on G & J Tires

Get our new Tire Manual, free on request.

G & J TIRE CO.
INDIANAPOLIS

Chicago Boston Buffalo San Francisco
Detroit Cleveland Denver

A RANGY LINE

1906

JACKSONS

THREE MODELS
"C," "D" AND "G"

RANGE OF PRICES
$1250, $1500, $2500

RANGE OF POWER
FROM 18 TO 40 H. P.

RANGE OF WHEEL BASE
90" — 100" — 108"

Plenty of Style, Strength and Speed

MODEL C
2 cylinders opposed, 5¼"x5", motor under body, wheel base, 90 inches; chain drive.
Price, $1250

MODEL D
A new model for 1906. 2 cylinders, 5¼"x5", motor under hood; wheel base, 100 inches. The most powerful shaft drive, two-cylinder car on the American market.
Price, $1500

MODEL G
40 h. p., 4 cylinder, 5"x5", wheel base, 108 inches. The most magnificently luxurious car of power ever marketed by an American maker.
Price, $2500

LARGE, ROOMY TONNEAUS TO ALL CARS. FINISHED AND UPHOLSTERED IN THE FINEST POSSIBLE MANNER THROUGHOUT.

A Live Line For Live Dealers : : : : : WRITE

JACKSON AUTOMOBILE CO.
JACKSON, MICH.

"No Sand Too Deep. No Hill Too Steep."

Digitized by Google

Stanhope

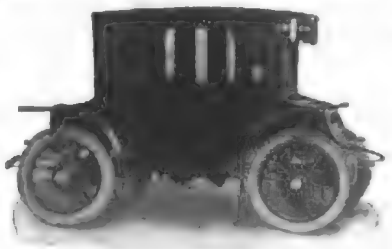
Baker Electrics

Depot Wagon

embody every possible good feature required to make them what they are so frequently called —

The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



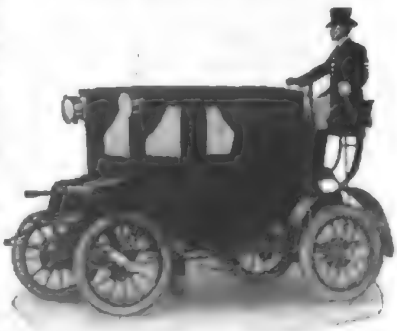
Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.

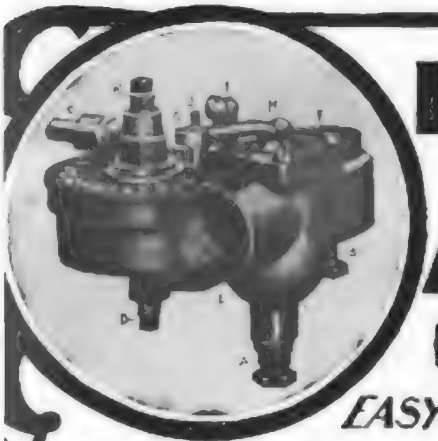
IMPERIALS, STANHOPES, SURREYS
DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co.

24 Jessie Street :: CLEVELAND, OHIO



Outside-Driven Brougham

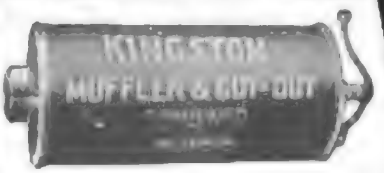


KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER



IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

SEE THOSE FLAPS?

ARCTIC OVER-PANTS
FOR THE MAN AT THE WHEEL

Made of Best Rubber Drill or Mackintosh; lined with Heavy Plush. Waterproof calfskin leather feet.

In ordering send inside seam and waist measure over clothing

Price $10

DAVIS PAT. LAP ROBES OF COMFORT

AN ABSOLUTE NECESSITY FOR WINTER DRIVING

Prevents Discomfort and Illness

Positively proof against Cold, Wind and Rain

KEEPS YOU AS SNUG AS A BUG IN A RUG

No matter how **cold** or **wet** the weather, these Robes are always **warm** and **dry** on the inside. Step into one and pull it up **all** around you. Sit down on the flap and it **cannot** jar loose or slip off as old style flat robes. When you stand erect the Robe falls to your feet, instantly affording easy egress. Plenty room inside for feet and legs.

Made of Best Quality Black Mackintosh Cloth, Soft Baby Bear Fur or Finest Grade Pure Rubber Drill. Guaranteed not to crack. All are lined with finest heavy imported dark green plush. Wearing portion under feet is calfskin.

PRICE, $10 Made of Baby Bear Fur (elaborate) $20

Illustrated Booklet and testimonials of prominent business men from both city and country everywhere free on request

DAVIS ROBE CO. 1327 CHAMPLAIN BLDG. CHICAGO, ILL.

References: Merchants' Loan & Trust Co., Marshall Field & Co., any Express Company or Motor Age

ORDER TODAY—Goods shipped same day order is received

MOTOR AGE says: "It is Perfectly Safe to Remit in Advance to the Davis Robe Co. Their goods are exactly as represented."

3 WAYS BY WHICH YOU CAN OBTAIN A ROBE OF COMFORT:

1. Remit with order. We prepay all express charges under this plan
2. Will be sent C. O. D. with privilege of examination before accepting goods
3. Sent on approval to responsible persons: we pay return charges if goods are not satisfactory to you

PENNSYLVANIA PRO CLINCHER

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

The Incomparable WHITE

The Car for Service

BULLETIN No. 11

which is now ready for distribution, contains full details, together with a map and many fine illustrations, of the classic tour of Ezra H. Fitch and party in three White steamers through the forests of Maine and Quebec. Write for a copy.

WHITE SEWING MACHINE COMPANY CLEVELAND OHIO

THE Compound WINS

Outclassing all Touring Cars regardless of price, in the New York Motor Club's Six-day National Economy Test, Oct. 30—Nov. 4.

Total Cost of Carrying Five Passengers $18.63

The motor went through the test without the slightest adjustment, proving conclusively that we have brought the compounding of a gasoline motor to a high state of perfection.

700 Miles Using But 43½ Gallons of Gasoline

Compound No. 6, driven by F. C. Carter, covered the entire distance at a cost of $3.73 per passenger, and negotiated all hills easily, including the famous Nelson's Hill on the road to Albany.

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocketbook and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.

Fig. 1

And the chances are ten to one that if you are forced to ride around the block on an ordinary tire with ordinary rims your tire will be rim-cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough. But if you take the strap like Fig. 2, with a little sawing you can cut it.

Fig. 2

Fig. 3

That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire.

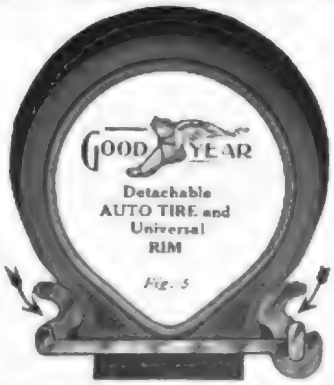


Fig. 5

But just as soon as it gets flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.

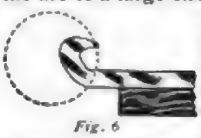


Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.

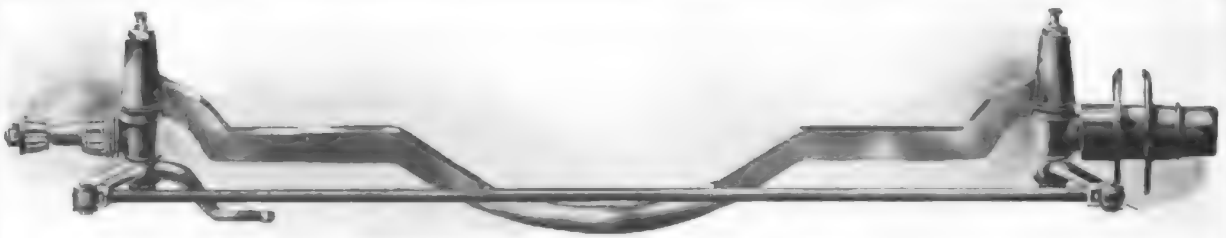
Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without the least injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, AKRON, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 258 W. 57th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 1219 N. Broadway; Cleveland, 9 Frankfort St.; Philadelphia, 1321 Spring St.; Denver, 239 Stratonath St.; and Detroit, 242 Jefferson Ave.



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

Digitized by Google

REO

The jewel of all the runabouts

$675 REO 1906 Four-seated Runabout. The extra seat carries two people facing forward, and when not in use is folded down snugly out of the way. 8 h. p., 1,000 pounds, 25 miles per hour.

A swift, strong, cozy light car easy to ride in; perfectly simple to operate; and with ample power to carry four passengers at speed up hill and down dale for 75 miles without refilling the tank.

This car won the prize for its class in the New York Motor Club's great six-day Economy test by

CARRYING 4 PEOPLE 700 MILES FOR $3.38½ PER PASSENGER

Where will you find so big a bunch of motoring satisfaction for $675?

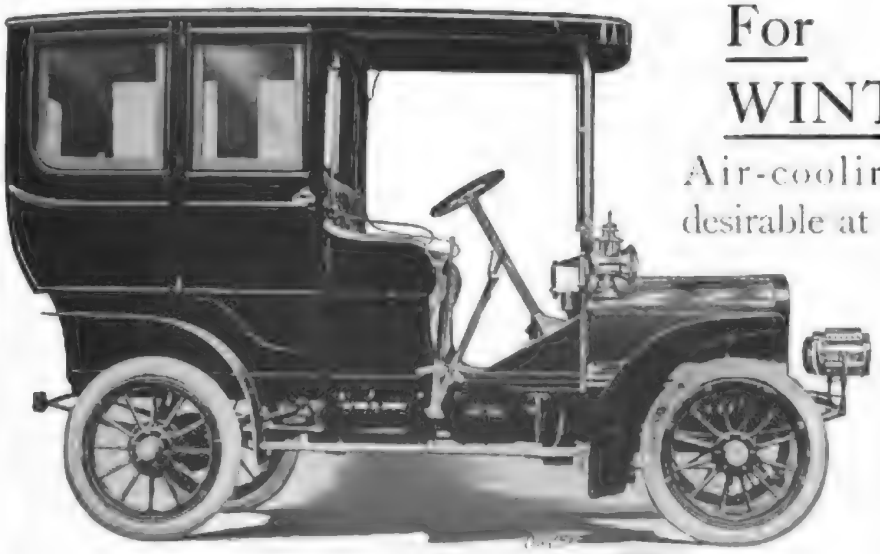
Reo 1906 Touring Car, 16 h. p., 1,600 pounds, 90-inch wheel base, 5 passengers, side-door detachable tonneau. Speed 35 miles per hour. $1,250.

Write for the REO book that tells why

REO MOTOR CAR CO. Sales Department, Lansing, Michigan
R. E. Olds, Pres. R. M. Owen, Sales Mgr.

Agencies throughout the United States

CORBIN CARS



For WINTER USE

Air-cooling, which is highly desirable at all seasons, is especially advantageous when applied to cars for cold weather driving.

Corbin Model D Limousine
$3,000 to $3,500

The Corbin Motor Vehicle Corporation

NEW BRITAIN, CONN.

NEW YORK, 4 West 38th St. BOSTON, 43 Columbus Ave. PHILADELPHIA, 629 North Broad St. CHICAGO, 1404-6 Michigan Ave.

Digitized by Google

LOOKING AHEAD

Thousands of owners prefer Imported **CONTINENTAL TIRES** because they are stronger, faster and will last longer than any other tire made, but usually ask the manufacturer to fit it with Imported **CONTINENTAL TIRES** too near to the time of delivery. Because the car is already fitted with some make of American tire, a manufacturer usually states that it would be a delay of from two to three weeks to make the change. To insure your getting them, **specify Imported**

CONTINENTAL TIRES

at the time the order is placed. In that way you are **sure of getting what you specify.** We carry a large stock at all our branches in the principal cities in the United States. Notify us at the time you place your order and we will see to it that no delays occur on our side.

BRANCHES

BOSTON, MASS., - - - 735 Boylston Street
BUFFALO, N. Y., - - - - 729 Main Street
CLIVELAND, O., - - - - 325 Huron Street
DETROIT, MICH., - - - - 260 Jefferson Ave

The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen'l Manager

43 Warren St. - NEW YORK

FACTORY, HANOVER, GERMANY

AGENCIES

Chicago, Ill., Excelsior Supply Co., 237 E. Randolph St.
New York City Motor Car Equipment Co., 55 Warren St.
Philadelphia, Pa., Jas. L. Gibney & Bro., 211 N. Broad St.
San Francisco, Cal., Pacific Continental Tire Agency, Golden Gate Avenue and Gough St.
St. Louis, Mo., Continental Tire Agency, 2908 Olive St.

The Daimler Manufacturing Co.

announces that it is now ready to book orders for the

1906 American Mercedes 40-45 H. P.

PRICE $7,500 PRICE $7,500

Through our sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company — THE DAIMLER MOTOREN GESSELSCHAFT, of Unterturkheim, near Canstatt, Germany, we produce **the only authorized copy, part for part, of the**

1906 Mercedes

AUTOMOBILE

All the shop drawings of the 1906 Mercedes, showing the latest changes and advances embodied in this celebrated car, are now in our hands, awaiting your examination. Will mail you the 1906 catalogue on request.

SAVE THE DUTY

DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, LONG ISLAND CITY, N. Y.
NEW YORK CITY GARAGE, 10 West 60th Street

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

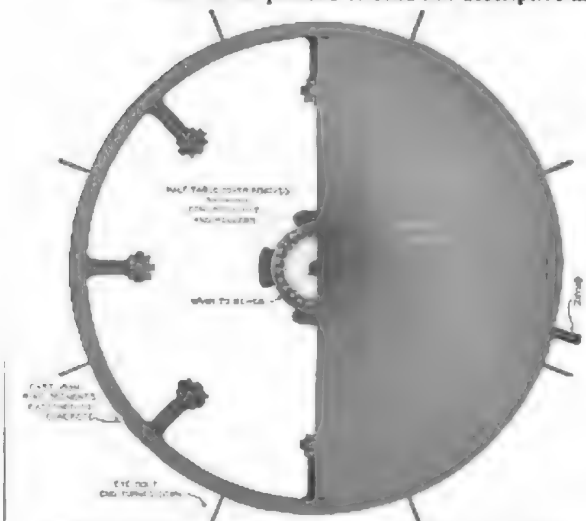
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

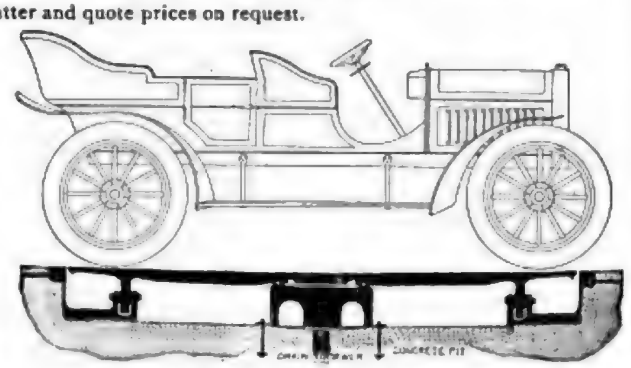
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

Michelin

Tires of the Very Highest Grade

Michelin Tires carry more guaranteed weight per wheel than any other pneumatic tire made in the world.

In Vanderbilt Cup Race the Michelin Tires were the only stock tires that did not require attention from start to finish — a record which is entirely exclusive from all other makes represented.

Michelin Tires are Copied but Never Equaled

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET
NEW YORK

E. D. WINANS, Gen'l Mgr.

Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

Digitized by Google

THE HARTFORD DUNLOP TIRE

OFFICE OF
DR. J. B. BOUCHER,
88 CHARTER OAK AVE.
TELEPHONE CALL 1864.

Hartford, Conn., Oct. 23, 1905.

The Hartford Rubber Works Company,

Hartford, Conn.

Gentlemen:-

You may be interested to learn that the Hartford Dunlop tires fitted to my two cylinder Knox which I have driven all season, have thus far covered a little over 3500 miles. I have had no trouble with the exception of four punctures. I am much pleased with the tires both as to their wearing qualities and the ease with which they can be removed and replaced.

I do not enjoy punctures but must admit that they are robbed of half their horror since using the Dunlop.

Very respectfully yours,

J. B. Boucher M.D.

THE
Hartford Rubber Works Company

Home Office and Factories Nos. 1 and 2,
HARTFORD, CONN.
Factory No. 3, New Brunswick, N. J.

BRANCHES:

BOSTON, 602 Atlantic Ave.
NEW YORK, 68 Chambers St.
NEW YORK, 1789 Broadway.
NEW YORK, 2355 Jerome Ave.
PHILADELPHIA, 138 N. Tenth St.
BUFFALO, 696 Main St.
SAN FRANCISCO, 473 Mission St.
CLEVELAND, 77 Bank St.
DETROIT, 256 Jefferson Ave.
CHICAGO, 83 Michigan Ave.
DENVER, 1564 Broadway.
LOS ANGELES, 116 East Ninth St.

GET READY! for the Fourth Annual ORMOND-DAYTONA RACES

On the Ormond-Daytona Beach, Florida, January 22d to 27th, 1906

The Annual Aristocrat of Race Meets Where Speed Kings are Crowned

Plan a brief vacation .... Escape cold weather for a few days by a trip to balmy Florida .... You will see nature's finest automobile speedway .... Why not take your car with you? .... For all particulars as to Railroad, Steamship, Hotel Accommodations, Programs of Meet, etc.,

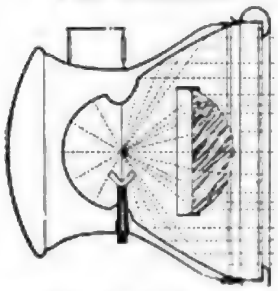
Address ... W. J. MORGAN, Gen'l Manager, 116 Nassau Street, New York

Representing the Florida East Coast Automobile Association

Digitized by Google

THE RE-INVENTION OF A RELIC

The Ancient



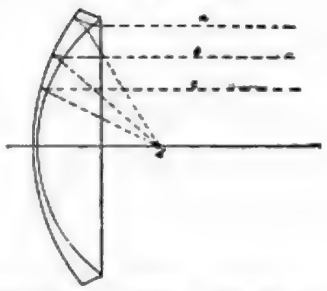
Abandoned by Rushmore ten years ago, patent expired.

FAILING IN THEIR EFFORTS TO IMITATE THE MODERN RUSHMORE SEARCHLIGHT, THE LANTERN MAKERS NOW TAKE UP THE ANCIENT DESIGN THAT RUSHMORE ABANDONED BEFORE AUTOMOBILES WERE KNOWN.

The best proof that the Rushmore Lens Mirror Searchlight has driven the lantern makers to the wall is the fact that they are now trying to create demand for the old style metal reflector light fitted with a spherical cup and a little bulls-eye lens.

This "parabola-lens" reflector was patented and was manufactured by S. W. Rushmore over seventeen years ago. The patent has expired. Over a thousand large "parabola-lens" marine searchlights were sold by us, but we abandoned the design ten years ago when we perfected the aplanatic lens mirror, which is now the standard in all the navies of the world.

The Modern



Aplanatic Mirror, perfected by Rushmore ten years ago, now standard of the world.

We guarantee the 8-inch Rushmore searchlight with a three-eighths foot burner to give more light than the big twelve-inch "parabola-lens" light with its big three-quarter foot burner. It is an eight to one proposition. The Modern against the Ancient.

A brand new reflector shows up pretty well on the first night it is lighted, but after that the silver plating blackens and no amount of scrubbing can improve it.

The drowning man grasps at straws. The drowning lantern maker makes a last effort to float himself on the time honored and abandoned metal reflector.

RUSHMORE DYNAMO WORKS, Plainfield, N. J.

1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.

AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

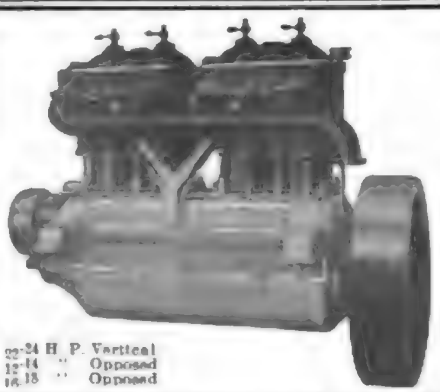
THE DIETZ OIL LAMPS

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York

ESTABLISHED 1840

Digitized by Google



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR

BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Latest European Novelties

RACING CAR
No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.

No. 5361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins; in sterling silver and rolled gold plate, designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER
Manufacturer, Jobber,
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 36th St., New York 318-320 N. Broad St., Philadelphia
20-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
107 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE
With All Goods
Bearing This
TRADE MARK

TRADE KOKUK MARK
REGISTERED

MANUFACTURED EXCLUSIVELY BY
F. S. CARR
74 Pearl Street, BOSTON, MASS.

E & J

MEANS

QUALITY In LAMPS

Lamp No. 70 REGARDING YOUR

1906 LAMP EQUIPMENT

We Guarantee to Please You in Both Quality and Price. Write us.

Edmunds & Jones Mfg. Co.

315 Riopelle Street, DETROIT, MICH.

THE

STANDARD AMERICAN COOLER

The Whitlock Cooler

Was used on the *Locomobile Racer that finished third in the Vanderbilt Cup Race.* It was never touched during the race. *It did its full* duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

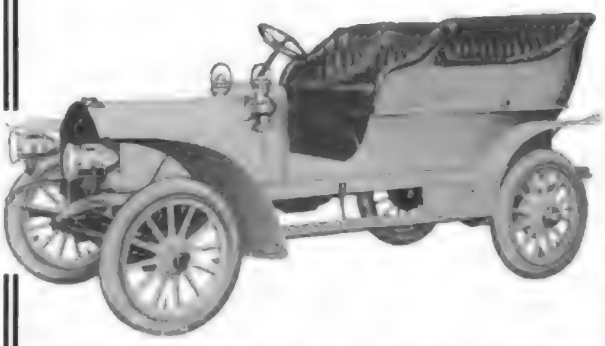
Hartford ... Conn.

KNOWLEDGE IS GOLDEN

1906

Stoddard-Dayton

Model D



The material concerns from whom we order	KNOW	we buy only the best of everything throughout.
WE make the car from stem to stern and consequently	KNOW	that no car in the world can be better built.
Dealers who sell the STODDARD-DAYTON	KNOW	their only trouble lies in getting enough cars.
People who have bought Stoddard-Daytons in the past	KNOW	that THEY are satisfied in each and every particular

¶ There only remains to be said, that the 1906 Stoddard-Dayton is better this year than it was last.

¶ What more can anybody want?

¶ Booklet ready. .... Catalogue later.

CHICAGO: McDuffee Auto Co.
NEW YORK: Stoddard-Dayton Agency, 60th and Broadway
BOSTON: Rendliff Motor Co.
MINNEAPOLIS: Haynes Auto Co
INDIANAPOLIS: Frank L. Moore.

Dayton Motor Car Co.

FACTORIES

Dayton ... Ohio

Digitized by Google

Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in..... **WILKES-BARRÉ, PA.** will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

THE
"GEECEE"
DRY
Storage Battery

Scientifically designed and constructed throughout.

A Storage Battery that Cannot be Beaten

No acids to spill, no fumes, no leaks.

An Electrical Reservoir

Which gives you electricity whenever you really need it.

Always at your service.

Royal Battery Co.
NEW YORK

National Sales Corporation
Factory Sales Managers
256 Broadway, New York

The Prest-O-Lite Tank Will Make Any Good Lamp Throw This Kind of Light

Equip your cars with the world's famous

PREST-O-LITE GAS TANK

No Waste
No Odor
No Attention
Tips Never Clog
Nothing to Freeze

ALWAYS READY
When you want gas, turn it on. When you don't, —turn it off.

Each tank holds gas enough for two months use. Empty tank can be exchanged at any dealers for full tank. No inconvenience. No time lost. Write for booklet.

PREST-O-LITE CO., - Indianapolis, Ind.
Exclusive Licensees under patents of the Commercial Acetylene Co.
AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL

BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

PETERSON & DRAPER, 166 Lake St., Chicago, Ill.
THOS. J. WETZEL, 11 Warren St., New York. } Direct Factory Salesmen.

CHAS. E. MILLER, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O. } Sales Agent Carrying Stock.

POST & LESTER CO., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

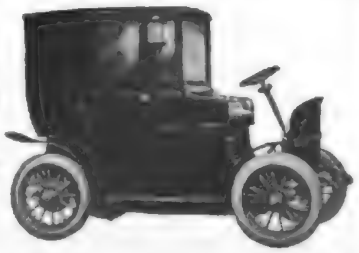
200 South Geddes Street **SYRACUSE, N. Y.**

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham-Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers **Hartford, Conn.**

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington R. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

GAS-AU-LEC

"THE SIMPLE CAR"

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the Best Materials Obtainable

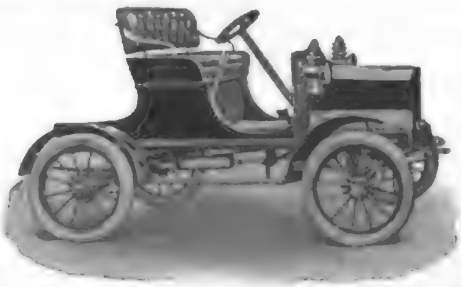
THE SIMPLEST GASOLENE CAR IN THE WORLD

—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction"

40-45 Horse Power, $5,000

CORWIN MANUFACTURING COMPANY
PEABODY, MASS., U. S. A.



Model "G" 10 H. P. Runabout

Well! When you have **Accessibility** and **Simplicity** together with the fewest parts possible coupled with strength what more can you want?

Our **Wolverine "G"** 2 cycle, 2 cylinder, accomplishes the above.

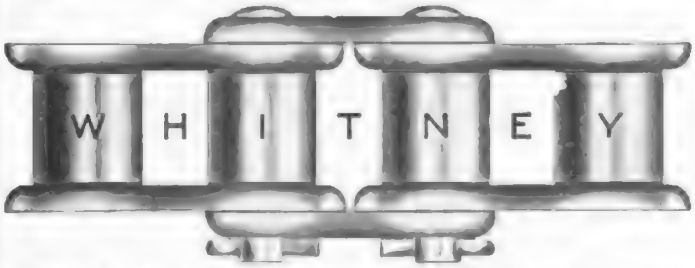
We Want Agents—LIVE ONES ONLY

LIST $650

Wolverine Automobile and Commercial Vehicle Company

Address Dept. "C." **Dundee, Mich.**

1906 Model "WHITNEY" Detachable Roller Chain—Patented



THE WHITNEY MFG. CO., Hartford, Conn.

Investigate "Whitney" Standards for dimensions of Roller Chains. They have been adopted by most of the leading American Automobile Manufacturers and have been recognized by other chain manufacturers at home and abroad. If they are made universal six sizes of chain can eventually take the place of over thirty sizes used in the past.

Our new line of chains for 1906 Model Cars have been adopted by a large number of the leaders and they are making remarkable records for quiet running and efficiency.

If interested send for new catalog dated November, 1905.

Digitized by Google

ADAMS-FARWELL

THE ALL SEASON CAR

3 Cylinder Motor 20-25 Horsepower
5 Cylinder Motor 40-45 Horsepower

Operated from rear seat or from folding front seat.
All windows may be lowered, making an open car.

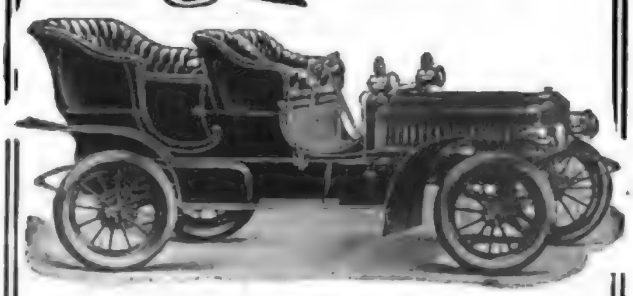
Five Other Models - From $2,000 to $4,000

No Water No Radiator No Fly-wheel No Fan
No Muffler Automatically Governed

CHICAGO SALESROOM: 1536 MICHIGAN AVE.

The Adams Company, Dubuque, Iowa, U. S. A.

THE LAMBERT



Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.

ANDERSON, IND.

Members American Motor Car Manufacturers' Association Chicago

AUSTIN

A LUXURIOUS CAR

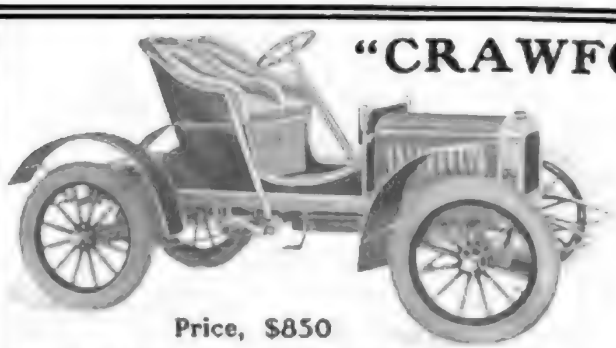
THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.

GRAND RAPIDS, :: MICHIGAN



"CRAWFORD" MOTOR CAR

Manufactured by the originator of the well known "Crawford" bicycles

The High Powered Runabout for City and Country Use.
2 cylinder upright actual 10 h. p. Wheel base, 78 inch.
Ball bearings throughout.
2 speeds ahead and reverse controlled by one lever.
2 powerful foot brakes.
High grade workmanship throughout.
Write for catalog.

Price, $850

CRAWFORD AUTOMOBILE CO. Main Offices and Factory: Hagerstown, Md.

New Amsterdam Motor Transportation Co., 152 W. 58th St., Sole representatives for New York City and vicinity

Digitized by Google

THE AUTO-METER

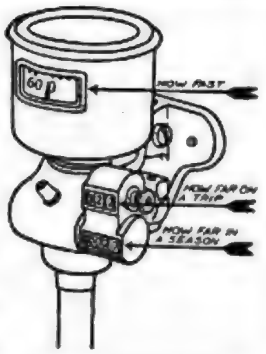
for your new 1906 car

will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.**
This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

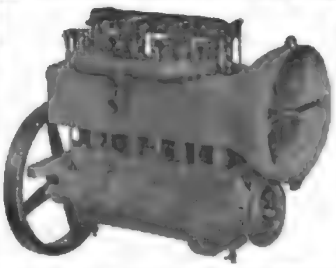
Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.



WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 145 Federal St., Boston Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

WE HAVE IT



Absolutely Tested by all kinds of Herculean Work

Positively Proved by an amount of faultless performance

Cylinders surrounded by Hood with Fan connection on outer end, blowing a **CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS**

TREBERT

AIR COOLED VERTICAL MOTOR

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3¼x4 inches.
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¾ inches.
Bearing on Connecting Rods, 2x1¾ inches.
Bearing on Wrist Pin, 1¾x1¾ inches.
Connecting Rods of drop forgings with phosphor bronze Crank Shaft
Base and Crank Case of Aluminum.
Width of Motor from end of trim to end of trim, 19½ inches.
Centre of Crank Shaft to bottom of Motor, 4½ inches.
Centre of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES ::: LIGHT POWERED CARS REBUILT
REFERENCE JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

Pressed Steel Frames

AND STANDARD PARTS

Automobile Manufacturers using our pressed steel frames on their machines are always certain that they have the best of frames procurable in point of reliability. We have recently increased our capacity and are equipped to turn out our standard frames, or frames of special design, in quantities for early delivery. We have presses also for making heaving stampings and pressings of all descriptions and are prepared to do any work in this line. We also make a complete line of

Rear Axles, Front Axles, Clutches, Change-Gears, Propeller Shafts, Steering Columns, Hubs and Other Automobile Parts

A. O. SMITH COMPANY

MILWAUKEE, WISCONSIN

Hayden Eames, Sales Manager, American Trust Bldg. Cleveland, O.

HAVE YOU SEEN THE NEW **KOKOMO** **MECHANICALLY-ATTACHED**

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,

KOKOMO, IND.

Digitized by Google

A TIMELY WORD TO

DEALERS

THE GALE $500

Model A

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS

Galesburg, Ill.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

MOLINE

1906

MODEL "A" 30-35 Horse Power. $2500.00

Four-cylinder, water-cooled motor. Interesting features—110-inch wheel base, 34-inch wheels with 4-inch tires, pressed steel frame, three speed sliding gear transmission, mechanical oiler, and large roomy body of handsome design.

MODEL "C" 18-20 Horse Power. $1750.00

Practically the same construction as above, except on a smaller scale. Four-cylinder vertical water-cooled motor, 100-inch wheel base, 32-inch wheels with 3 1-2 inch tires, neat new design of double side entrance body.

MODEL "G" 16 Horse Power. $1000.00

Double opposed motor under the body, plenty of radiation, lots of bearing area, new design of wate rpump, mechanical oiler, 86-inch wheel base, running boards at side, and detachable side entrance tonneau body.

Advance circular ready for distribution

Moline Automobile Co.

East Moline, Ill.

Why Premier Cars

Appeal to All Classes

To the Professional Man—because of its simplicity.

To the Business Man—because of its readiness to go at all times.

To the Repair Man—because of its perfect accessibility to working parts.

To All Men—because of its low cost of fuel and maintenance.

We have much data from drivers on this latter point; for instance, one writes us: "The total cost of my running this season—5,000 recorded miles—is only a trifle over one cent per mile for the car, or 1-5 to ¼ cents per mile per passenger; total for repairs, fuel, etc., excepting tires."

These are points to remember when purchasing a car.

The Air Cooled Season never ends.

Side Entrance $1,500. Runabout $1,250

Our new [1906] Doctor's Special $1,425

Light Truck $1,400

PREMIER MOTOR MFG. CO.

1001 George St., Indianapolis, Ind.

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN Runabouts
OLDS TOURING CARS
CADILLAC
FORD
THOMAS Models 17 and 18
GENERAL
YALE
AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

"SOOT-PROOF" WINS

Five Prizes Were Awarded to the Cars Using "Soot-Proof" Plugs

The "McMurtry" Prize for the car having the least ignition trouble was awarded to a Reo using "Soot-Proof" Plugs. These cars covered a distance of 700 miles during the National Economy Test of the New York Motor Club, October 30 to November 4, 1905.

These cars had absolutely no spark plug troubles, and the original plugs were used throughout the entire run. Thus again has the "Soot-Proof" Plug demonstrated its superiority, reliability and economy.

"SOOT-PROOF" in Name and Fact
Non-short-circuiting Self-cleaning

C. A. MEZGER
203 W. 80th St., NEW YORK

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

Keeps Your Car Bright

Keeps Your Car Clean

Makes Old Cars Look Like New

HOFFHEIMER SOAP CO.
CHICAGO

FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

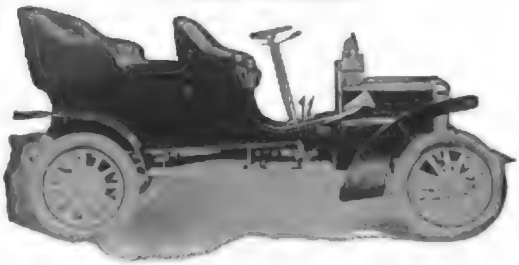
Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.
107 West Monroe St. :: Chicago, Ill.

Digitized by Google

Northern

"Noiseless and Dustless"



7 h. p. Runabout	$ 650
18 h. p. Side Entrance Touring Car	1,700
Limousine	2,500

Investigate our claim for QUIETNESS—you will find that the Silent Northern surpasses in this respect. It is QUIETER than the finest electric.

Investigate our claim for EASY RIDING—four full elliptic springs and scientific distribution of weight which includes placing of all mechanism under the front hood, insure a freedom from vibration such as you can have no conception of until you ride in a Silent Northern.

There are other features embracing our THREE POINT MOTOR support and encased mechanism which reduce the cost of maintenance to the minimum. Send for our complete Catalogue 14 which explains in detail.

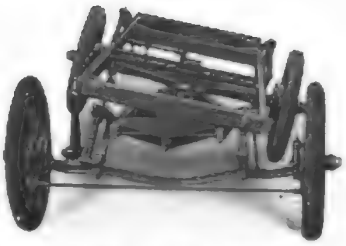
NORTHERN MFG. CO.

DETROIT, U. S. A.

Members Association Licensed Automobile Manufacturers.

Peter Fogarty, 142 W. 38th St., New York City Agent.

Rear Wheel Raised Over a Foot



Lower Frame Level

Claims vs. Reasons

The easiest things to make about an automobile are claims—claims for durability, simplicity, comfort—you know the list. Reasons for these things will be found in abundance in even the most cursory study of

THE MARMON

"A Mechanical Masterpiece"

The picture furnishes a hint of its mechanical distinctiveness. Even in such rough-road tests as this, the mechanism is maintained in alignment, free from binding and twisting strains. This flexibility, this natural freedom from strain and undue friction, furnishes a reason for length of life and highest efficiency for the mechanism and a very luxury of motion over rough roads that is unknown and unknowable in any other car. This is due to the patented Marmon feature

Double Three-Point Suspension

Luxurious cast aluminum body in one frame, power plant on another frame, each frame suspended on three pivotal points. Eliminates the ruinous strain inevitable in all other cars. Means fewer parts, simpler parts and less wear on all parts, tires included. Four cylinders, air-cooled. A strictly high-grade proposition for the agent in touch with high-class trade.

Full description in Booklet L. Get posted on the one modern car.

NORDYKE & MARMON COMPANY, Indianapolis, Ind.

(Established 1851) *Members American Motor Car Mnfs. Assn.*

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY

840 Austin Avenue

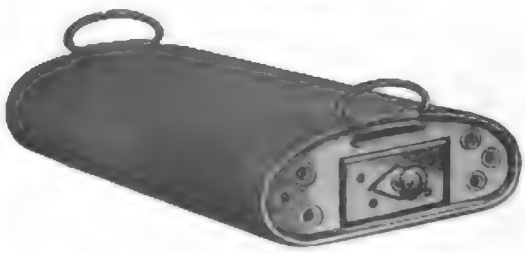
CHICAGO ... ... U. S. A.

Keep Your Feet Warm

When riding or driving in your Auto use a

LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

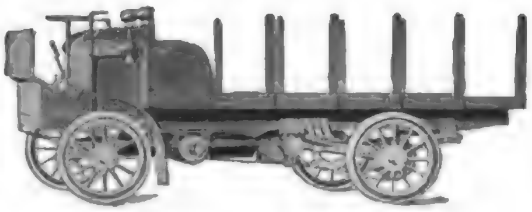


300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the standard and best. They burn **LEHMAN COAL** at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the BEST money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

LEHMAN BROS., Mfrs., 10 Bond St., New York

J. W. ERRINGER, Gen. West. Sales Agt. [redacted]
45 East Congress St., Chicago, Ill. [redacted]

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.

Did Anyone Ever Hear

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

We have a full description of 1906 model ready to mail to you if you will send us your address. Will also mail booklet explaining performance of '06 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO.

CLEVELAND, OHIO

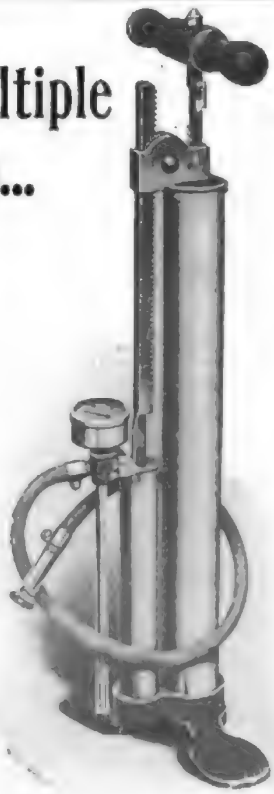
AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile Supply Co., Ltd., Toronto; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.

Member A. L. A. M.

THE

Kellogg Multiple Gear Pump...



JOBBERS
DEALERS
USERS

This is the limit of perfection. ... 1906 Catalogue will soon be ready.

...Write...

WRAY PUMP & REGISTER CO.

191-193 Mill St.

Rochester, N. Y.

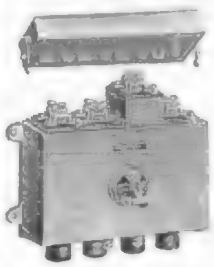
Or Brandenburg Bros' & Alliger, 105 Reade St., New York City, 85 Lake St., Chicago, Ill.

WHILE RESTING YOUR CIGAR

Think what that term "**Perfect**" means when applied to the Ignition system of your car. The

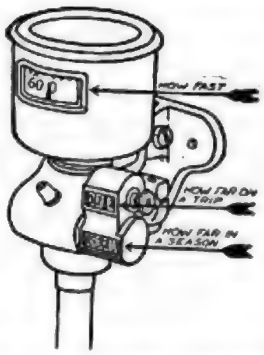
PITTSFIELD LINE

is Perfect in economy, insulation, rapidity and reliability. Our 1906 Coil is a revelation. It is the most rapid, the most economical, positively the most reliable and durable coil in the world (**BAR NONE.**) You *cannot* puncture or rupture it. The perfect insulation is proof against these troubles. Our 1906 *Commutator or Timer* is strong, reliable, and *we guarantee a positive contact under all conditions.* Our 1906 Special Jewel Spark Plug prevents fouling or short circuiting. Sparking points and chamber between core and shell *thoroughly cleaned* at each explosion. Get details before contracting for 1906 requirements.



PITTSFIELD SPARK COIL CO.
Pittsfield, Mass.

Digitized by Google



THE AUTO-METER

for your new 1906 car

will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.**
This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

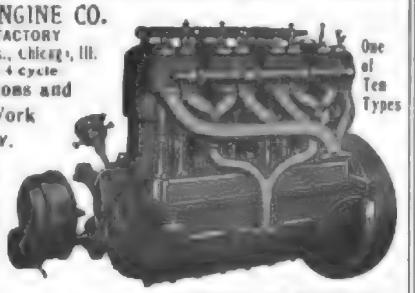
WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1621 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

MOTORS — All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.

4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.



Telephone North 1607 VERTICAL AND HORIZONTAL

Baldwin Automobile Chains and Sprockets

Best Material
Accurate Construction

BALDWIN CHAINS AND SPROCKETS

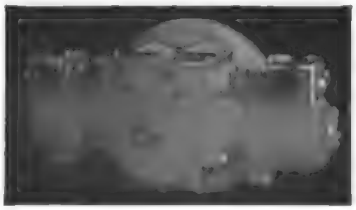
SEND FOR CATALOGUE

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

K. Franklin Peterson, Western Sales Agent
168 Lake Street, Chicago, Ill.

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

Veeder

ODOMETERS

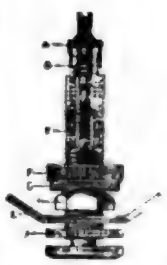
For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

SCHRADER'S UNIVERSAL VALVE

Trademark Registered



SIMPLE AND ABSOLUTELY AIR TIGHT

MOTOR TIRE VALVES, as shown in cut, are made in four lengths as shown. Cut is exactly half size of the 2 in. valve

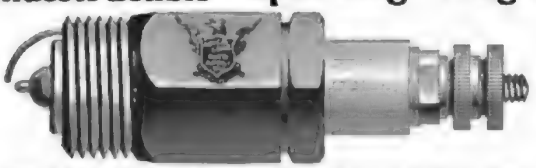
SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

A. SCHRADER'S SON, Inc., Nos. 30-32 Rose Street, New York

Digitized by Google

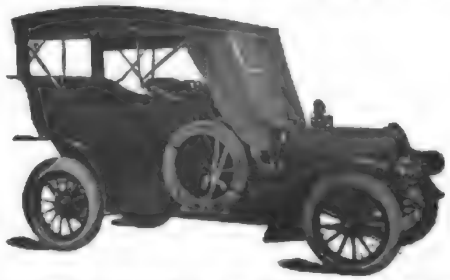
AMERICAN Indestructible Sparking Plugs



Stand the test where all others are knocked out of business. Every one we sell brings us more business. This fact shows what they are. The Original and Only Double Insulated Pure Mica Core. All others are worthless imitations. WRITE FOR 1905 CATALOGUE.

AMERICAN COIL COMPANY
FOXBORO, MASS.
AUTO SUPPLY CO., 1062 Broadway, New York Agents
GEO. H. HILL, 306 McAllister St., San Francisco, Cal.

CATALOGUE ON REQUEST

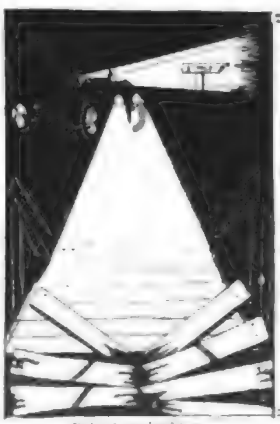


APPERSON BROS., KOKOMO INDIANA

MUD
FORGET IT AND USE
WEED'S TIRE GRIPS.
POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST. NEW YORK CITY.

MUD GUARDS
HOODS AND FORGED IRONS
"The Best Kind"
HAYES MFG. CO.
750 Bellevue Ave. Detroit, Mich.

The Winton Front Axle Casting of Parsons' Manganese Bronze
Fifty thousand pounds of Ingots furnished for the 1906 Cars.
The William Cramp & Sons Ship & Engine Building Company
PHILADELPHIA, PENNA.



Danger Around the Corner
can be detected IN TIME if you carry your lamps on
THE IMPERIAL-LYON Automatic Lamp Adjuster
"It Lights a Turn Before You Make it"
An indispensable necessary for automobilists who ride after dark.
Makes your lamps turn with your wheels, throwing a light around a bend before the body of your car swings.
Ride in safety by riding behind the Imperial-Lyon Automatic Lamp Adjuster.
Write us today for circular and price.
The Imperial Brass Mfg. Co.
249 S. Jefferson St., Chicago

Patent applied for

STOP THAT NOISE!
NEW PROCESS PINIONS
Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.
LET US HEAR FROM YOU.
THE NEW PROCESS RAW HIDE CO.
SYRACUSE, NEW YORK

STOLP COOLERS

Patents Pending

GOOD COOLERS
Stolp Mfg. Co.
CHICAGO

Digitized by Google

Does your belt slip?

No wonder the cylinder and bearings get hot. Oil-pumps and fans can't work properly if the belt isn't right.

TRADE MARK

Powco

Steel Belt

always runs perfectly and won't slip, stretch or break.

"Lasts as Long as the Car"

If your AUTO dealer hasn't it, send us the length of your present belt, name of car and $3, and we will send you a POWCO BELT by return mail. Money back if not satisfactory. Write for Circular D.

Philadelphia Ornamental Wire Co.
628-630 Filbert St., Philadelphia

No. 66
Non-breakable Mungin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

Turns night into day

The Neverout

Mirror Lens Searchlight

throws out a steady stream of penetrating white light
The new *Neverout*
Patent Safety Gas Producer
supplies the necessary gas in a safe and simple manner at a cost of less than one half cent per hour
Write for free illustrated catalogue
LOSE MFG CO.
912 Arch St., Philadelphia

Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3½x3½ in., 12-14 B. H. P.
Water cooled, 4 cylinder, vertical, 3½x3½ in., 14-16 B. H. P.
Water cooled, 4 cylinder, vertical, 4x4½ in., 20-22 B. H. P.
Water cooled, 4 cylinder, vertical, 4½x5 in., 35-40 B. H. P.

MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.

Weak Batteries

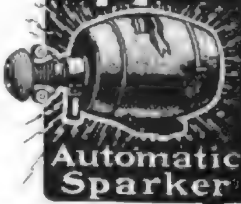
never bother the owner of an

Apple Automatic Sparker

It is a perfect storage battery charger. Easily applied to any automobile, launch or stationary engine. It makes trouble from exhausted batteries a thing of the past, and insures a hot, steady spark with plenty of speed and power at all times.

Automobile owners should insist on an Apple Electrical Equipment for their machine. That means correctness at all points. Write for further information.

THE Apple Automatic Sparker



Dayton Electrical Mfg. Co.
75 Beaver Bldg **DAYTON, O.**

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

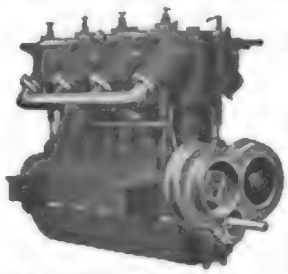
Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.

S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE,
but cannot cut the journal.

In ordering Phosphor Bronze Castings state adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

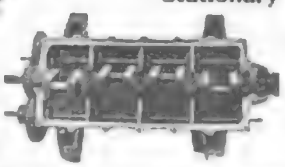
Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA



"Aster" Motors

From 1 to 60 H. P.

Automobile Motors
Marine Motors
Electric Groups
Stationary



Gas, Gasoline and Kerosene

ASTER CO.,
Office, 1591 Broadway, New York

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

LATEST TYPE — **WILLARD** — LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

Digitized by Google

BRISCOE MFG CO.

Makers of

SHEET METAL PARTS

For Automobiles

For obvious reasons we prefer not to insert in our advertising matter, at this end of the season, illustrations of our 1906 designs and construction details. Those who are in correspondence with us, however, know what is doing. Manufacturers who want inside information will receive prompt replies to their letters.

Our two large plants are ready to take care of our rapidly increasing business. We can not only promise but make deliveries.

During the past season we sold 12,945 radiators to 54 bona fide motor car manufacturers, among whom are nearly all of those who have produced high-grade and successful cars.

Over 30,000

BRISCOE RADIATORS

are now cooling automobile engines.

We make

Both Honeycomb and Tubular

Radiators

Iron and Aluminum

Hoods and Fenders

Sheet Metal

Dashes and Seats

Galvanized Iron and Copper

Gasoline and Water Tanks

Sheet Metal

Runabout Boxes

Write to our Nearest Office for Estimates and Get in Line for 1906

BRISCOE MFG CO.

DETROIT, MICH. and NEWARK, N. J.

WITHERBEE

Storage Batteries

Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK

CHICAGO and CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

MONON--C. H. & D.

Ride this way once and you'll ride again—we think.

Chas. H. Rockwell, Traffic Manager

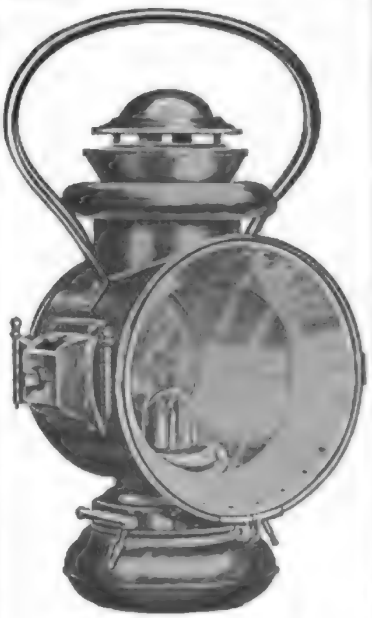
Frank J. Reed, Gen'l Pass. Agt.

CHICAGO

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.

BUFFALO, N. Y.



THE HAM GOLD BLAST AUTO LAMPS

"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:

Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:

Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:

Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

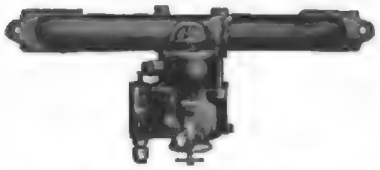
WRITE FOR BOOKLET

C. T. HAM MFG. CO.

ROCHESTER, N. Y.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

CHICAGO AUTO AGENCIES

Pardee-Ullmann Co.
Agents for
PACKARD
AND
FRANKLIN
1218-1220 Michigan Avenue
Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.
Distributors for
Stoddard-Dayton and Royal Tourist
Phone South 1297
1449 Michigan Ave CHICAGO

Cadillac Automobile Co. of Illinois
1312 Michigan Avenue, Chicago
CADILLAC
Four Cylinder, High Power Touring Car
Light Touring Cars Runabouts Delivery

C. A. COEY & CO.
Illinois and Eastern Iowa Agents for the
THOMAS FLYER
Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042
1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all six lines together with all second hand and shop worn models to make room for 1906 agency goods now coming in.—Hoffman touring car, new $850; Murray runabout, $250; Oldsmobile, $250; Buckboard, $200; Gale, $4 0; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller" "Conic" and exclusive United States importers for the Benz, Mannheim, Germany. Call and see us or send for Catalogs.
MEAD MOTOR CO., 1202-1216 Wabash Ave., CHICAGO

TIRE REPAIRS
All makes and types given equal attention
Correspondence solicited
RUBBER GOODS REPAIR CO.
80 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...
12-16-32 h. p., $1000 to $2000
Write for Catalogue
ADLAND MOTOR CO.
1303 Michigan Ave., Chicago

EVERYTHING IN
AUTO SUPPLIES
FOR OWNER AND DEALER
SEND FOR CATALOGUE NO. 49
EXCELSIOR SUPPLY CO
ESTABLISHED 1876 CHICAGO.

OLDSMOBILE
Agents and Distributors for Illinois and Wisconsin
THE GITHENS BROS. CO.
1528 Michigan Ave., Chicago
Telephone, South 1658

GOOD AGENTS WANTED
PREMIER
FOR ILLINOIS AND IOWA
RALPH TEMPLE
309 Michigan Avenue CHICAGO

The Importers' Company
AGENTS FOR
Richard-Brazier Cars
1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.
128 to 146 North Broad St., PHILADELPHIA
OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO
The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.
The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for
Thomas Flyer Stevens-Duryea Orient
Pierce-Arrow Oldsmobile Buick

Searchmont Cars Rebuilt
Searchmont Repair Parts of every description for sale.
FAIRMOUNT ENGINEERING WORKS
3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY
ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1322-26 Michigan Ave. Phone 1092 South
322-25 Fourth St. Phone 2781 Main

Digitized by Google

TOOLS for producing duplicate Metal Parts

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class, and every effort will be made to give satisfactory service.

L. T. GAUSS, 222 Mill St., Rochester, N. Y.

DIES for blanking, forming and drawing
DRILL JIGS
MILLING FIXTURES
VISE JAWS
SPECIAL CUTTERS, ETC.

Of course if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
The Lewis & Matthews Co.
Foreign and Domestic Cars — Automobile Selling Agts. — Garage Supplies — Repairs — Used Cars
66, 68, 70 Stanhope St. — Cable Address: "Autobead"
Telephone Tremont 711 — Boston, Mass., June 23, 1905

Herz & Company, 187 Elm St., New York, N. Y.:

Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.

Very truly yours, The Lewis & Matthews Co., Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth.
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

Bausch & Lomb
MANGIN
Search Light
Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

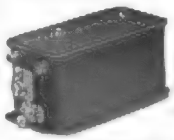
¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.
Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.
ROCHESTER, N. Y. NEW YORK. CHICAGO.
BOSTON. SAN FRANCISCO. FRANKFURT, A/m Germany.

JUMP SPARK COILS



For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

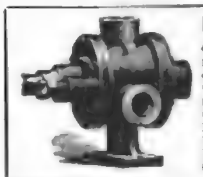
Send for Catalogue K.

THE KNOBLOCK-BEIDEMAN MFG. CO., South Bend, Ind.

GOOD TOPS

We make them. LONDON tops fit any car. GUARANTEED all styles. Prices, samples and description of construction mailed on request.

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

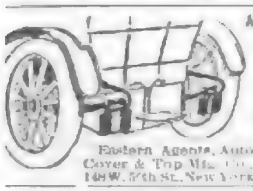


LOBEE ROTARY PUMP

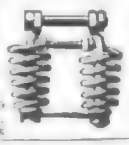
4000 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 240 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York, A. L. Dyke Auto Supply Co., 4703 Olive St., St. Louis, Mo.

HIGH-GRADE EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO.
Corner May and Commercial Streets, Dayton, Ohio



Absorbs all vibration



The Supplementary Spiral Spring

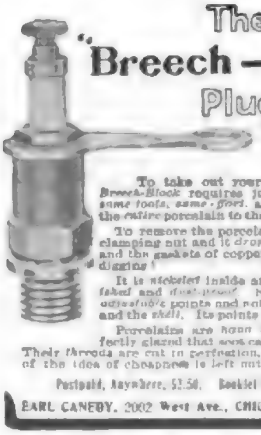
No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular today and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.

Eastern Agents, Auto Cover & Top Mfg. Co., 148 W. 57th St., New York

The "Breech-Block" Plug



The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort*, and *our metal* cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it *drops out* of its holder, and the gaskets of copper drop with it. No digging!

It is *nickeled* inside and out. *Highly polished* and *dust-proof*. Sparks between *two adjustable* points and not between *one* point and the *shell*. Its points are *protected*.

Porcelains are *hand turned* and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of cheapness is left out of them.

Postpaid, Anywhere, $1.50. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

Digitized by Google

Rajah
SPARK PLUGS

The Most Reliable IGNITION ABSOLUTELY SURE

Price, Postpaid $2.00

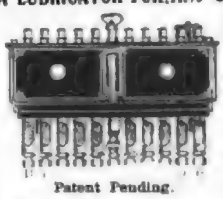
RAJAH AUTO SUPPLY CO., 140 Washington Street New York

OLD Tires Made NEW
New Tires Made Puncture-Proof
NEWMASTIC FILLING
For Clincher and Single Tubes
Just as Resilient as a Pneumatic
Just as safe as a Solid Tire
How Do We Do It?
Write Us and Learn
NEWMASTIC TIRE CO.
1382 Michigan Ave., CHICAGO, ILL. Tel. South 1201
ST LOUIS, MO.

Auto Top Bronzes
Bone Separators, Snaps, D Rings, Nuts, Screws, etc Also Mud Guards, Dashes Tools, Boxes, Gun d Bolts, etc.
C. W. COOPS CO.
3 Appleton St., Boston, Mass.

Standard Roller Bearing Co.
STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles
Send for Catalogue. PHILADELPHIA

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.
Made with any number of feeds. Write for circular.
Patent Pending. Manufactured by
J. T. PEDERSEN, 642-644 First Ave., N. Y.

Gilbert Auto Fabric Supplies
LOOK FOR THE NAME
FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.
The Gilbert Mfg. Co.
New Haven, Conn.

WELCH

1906 LIMOUSINE CAR 1906
FOR
FALL AND WINTER USE
PRACTICALLY IMMEDIATE DELIVERIES

¶ Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS. ¶ Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. ¶ 4 to 50 miles on direct drive.

So simple a child can operate.

WELCH-
Motor-Car Co.
Detroit and
Pontiac Mich.

Dust Guards
Make Motoring a Clean Sport
For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.
W. H. BROWN
124 W. Jackson Blvd., CHICAGO, ILL.

READ MOTOR AGE ... $2.00 per Year

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, Pa.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 250 North Broad St.
New York, 49th St. and 8th Ave.
San Francisco, 63-1 Howard St.
Pasadena, 33 South Raymond Ave.
Minneapolis, 3d Ave. So. & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 5306 Centre Ave.
Rochester, 150 South Ave.
Portland, Ore., 140 5th St., N.
Cleveland, 404 Huron St.
Detroit, 255 Jefferson Ave.
Chicago, 294 East Lake St.
Buffalo, Cleveland Automobile and Cycle Co., 840 Main St.
Boston, 39 Stanhope St.
Savannah, 301 Bull St.
St. Louis, 3044 Olive St.
Denver, 1449 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada.

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

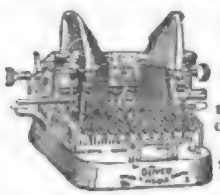
We Want Agents

for the

OLIVER Typewriter

—the standard visible writer—

In cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

166-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its on the market, and is positively accurate. No ation of the indicating hand.

KEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, reliable and popular Plug on the market. 40,000 last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth og for 10 cents in stamps.

. WILLIS CO., 7 Park Place, New York

OR $2 PER YEAR

READERS OF

MOTOR AGE

Receive 1560 pages of interesting mechanical descriptions and touring hints

WHERE CAN YOU BEAT THIS?

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

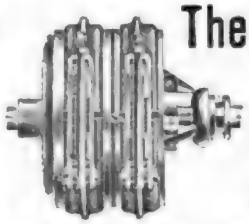
SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.



The Ball Improved Transmission

and REVERSE GEAR

— FOR —

Automobiles and Motor Boats

MADE ONLY OF SPUR GEARS

Patented April 9, 1901; Nov. 3, 1903; Jan. 13 1904; Feb. 23, 1904.

NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.

Western Agents: J. H. Neustadt Co., St. Louis, Mo.

SHELBY SEAMLESS-STEEL-TUBING

BEST MADE FOR AUTOMOBILE CONSTRUCTION.

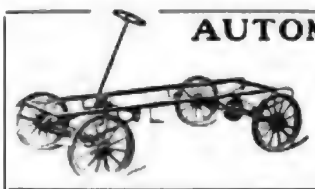
SEND SPECIFICATIONS

WE QUOTE PRICES

SHELBY STEEL TUBE CO.

PITTSBURG, PA.

BRANCH OFFICES—NEW YORK—CHICAGO.



AUTOMOBILE RUNNING GEARS

WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Your $5.00 Back

if after 30 days' trial you don't feel absolutely sure the

SKINNER PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

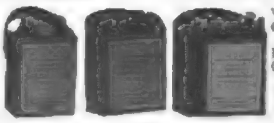
$5 Express Prepaid
Send us your order today

SKINNER & SKINNER
Mfrs.
4134 Indiana Avenue
CHICAGO
References: Illinois Trust & Savings Bank, Chicago

A Glance Tells You

That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.

SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.
Direct factory representatives: K. Franklin Peterson, 105 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.



Voltage—4.6 and 8
Capacity—
20 Amp.—Hours
Prices—$6, $9, $12
Other styles—
$3.25 to $22.00
Established 1889
Catalogues on Request.

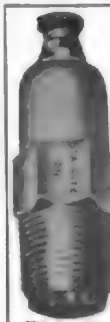
AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

St. Louis 18-22 30-34 Actual H.P.

"RIGS THAT RUN"—We Make Them
ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS PEORIA, ILL.

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing
A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.

ROBT. F. BRITTON, Prest. and Mgr. ROY F. BRITTON, Secy. and Treas



SIA-RITE
DEALERS
Do not buy spark plugs of half a dozen concerns. It isn't necessary.
Condense Your Orders
thus obtaining lower prices, and use "Sia-Rites" exclusively. 60 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1905, price list.
The R. E. Hardy Co.
225 W. Broadway, N. Y.

No. 4, 3/8-in. Porcelain, $1.80 P. J. DASEY 431 Wabash Ave., Chicago No. 34, 1/2-in. Mica, $1.75

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy** and **satisfaction** in having such work done outside of the city.
W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 371 Wabash Ave.

"SOLDERENE"
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.
Sample 10c. Dealers Write for Price.
CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

DIAMOND WRAPPED TREAD TIRES
DIAMOND RUBBER CO., AKRON, OHIO

REST YOUR TIRES with the **"Springfield" Auto Lift**

Showing Lift in Position to Receive Car.
You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.
E. J. DAY & CO., Pacific Coast Agents, San Francisco
THE SHAWVER CO., Springfield, O.

HOT SPRINGS, ARK.
Only 20½ Hours from Chicago
VIA THE
WABASH
You can leave Chicago daily at 11:30 A. M., on the
BANNER BLUE LIMITED
the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.
Write for free Booklet telling all about this popular health and pleasure resort.
Ticket Office, 97 Adams St.
CHICAGO
C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A. Chicago.

Graphite for the Motor
DIXON'S GRAPHITE
Motor Lubricants
Interesting booklet and samples FREE.
Joseph Dixon Crucible Co.
Jersey City, N. J.

MOTOR CAR SPECIALTIES and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX.
FAYETTEVILLE, N. Y.

Eclipse Pocket Ammeter
For General Battery Testing
0 to 20, 0 to 30 Amperes.
"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.
Eldredge Electric Mfg. Co.
Springfield, Mass. U. S. A.

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

SPROCKETS
Chains and Differentials
CULLMAN WHEEL CO.
1021 DUNNING STREET, CHICAGO, ILL.

Special Design Finest Quality Built to Order
BODIES AND TOPS
C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., XV Ft Wayne, Ind

CHAIN TOOL

NEW CAT READY

SENT PREPAID FOR 45c

THE MOTOR CAR SUPPLY CO.
1427 Michigan Avenue CHICAGO, ILL.

LUBRICATE WITH

NON-FLUID OILS

They are much cleaner, cheaper and more generally satisfactory to use than fluid oils or greases. Will insure most efficient service from your car. Are sold by leading dealers. If you cannot obtain them write us for free sample

N.Y & N.J. Lubricant Co. 14 Church St., New York 70 9th St., San Francisco

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

Force Feed Lubrication

Constant Sight Feed. No Liquids

McCord & Co., 1402-80 Old Colony Bldg., Chicago

K. J. Day & Co., Pacific Coast Distributors 324-326 Golden Gate Avenue, San Francisco, Cal.

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building :: :: Chicago

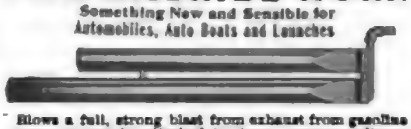
All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

A PLEASURE TO HEAR THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 86th St.

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 362 JACKSON BOULEVARD, CHICAGO

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

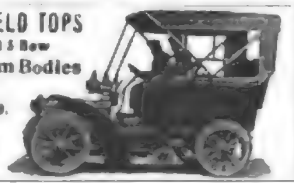
SPRINGFIELD TOPS

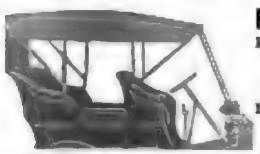
3, 4 and 5 Bow

Aluminum Bodies

Springfield Metal Body Co.

72 Birnie Ave Brightwood SPRINGFIELD MASS.





Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

The IGNITION PROBLEM is SOLVED

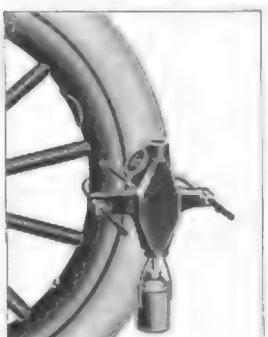
in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No Batteries. No Coil. No Commutator.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N.Y.



ANYBODY CAN USE IT

Blowouts, sandboils, glass cuts or other damaged spots on outer coverings; torn off clens, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time"
Vulcanizer Co.
Topeka, Kan., U. S. A.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

ROBERT VOLT - AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS
30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.
63 Shelby St. Detroit, Mich.

For Thanksgiving Day

the Nickel Plate Road will sell tickets, within distance of 150 miles, November 29 to 30, at rate of a fare and a third for the round trip. Return limit December 4. Three through trains daily to Ft. Wayne, Cleveland, Erie, Buffalo, New York, Boston and New England points. No excess fare charged on any train on the Nickel Plate Road. Standard equipment on all trains. Meals served in Nickel Plate dining cars on American Club Meal Plan ranging in price from 35 cents to $1; also service a la carte and mid-day luncheon, 50 cents. Chicago depot, La Salle and Van Buren streets, on the Elevated Loop. Telephones Central 2057 and 6172.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.
352 S. Claremont Ave.
CHICAGO.

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation dans le vide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET NEW YORK

MAT'S BODY POLISH

Prevents the Finish from Cracking or Staining

Used by the Chicago Garages. Send for sample.

$2 PER GAL. **MAT. WEIS**
1412 Michigan Avenue, CHICAGO

SPIRAL TUBING **RADIATORS**

HOODS ANY STYLE OR SIZE

LONG MFG. CO.
381-3-5 Wabash Ave. CHICAGO

Digitized by Google

See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

THE BILLINGS & SPENCER CO.
HARTFORD, CONN.

If You Are a Judge of Good Plugs

so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS
Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 2 Plugs. Full guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit any make of motor. State make of your motor when ordering.

HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

"Everything for the Autoist but the Auto"

THE NEW BOOK IS READY PLEASE SEND FOR IT

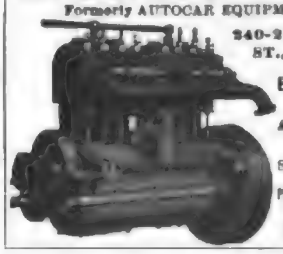
We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

Saks & Company Broadway, 32d to 34th Streets NEW YORK

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.
Formerly AUTOCAR EQUIPMENT CO.



240-244 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

PETERSON & DRAPER

Direct Factory Representatives.

VALVELESS-PUMPS
WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.

HUSSEY DROP FORGINGS
AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2020 Axtell Street CLEVELAND, OHIO

MOTOR AGE

CONTAINS WEEKLY THE

Best Budget of Automobile News in the World

Subscription $2.00 A Year

MISCELLANEOUS.

Advertisements under this head 1 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

1905 Model B Pope-Hartford, used but little; in A1 condition; $450. J., care MOTOR AGE.

THE manager of foreign department of a prominent automobile factory is about to resign from his position on account of the firm having changed its foreign policy, and is prepared to negotiate for a new connection in the same or similar line.

This gentleman is recognized as one of the best authorities on export business in general and has all the qualifications of experience, foreign languages, energy, tact and influential connections abroad to guarantee his success.

To an enterprising automobile factory he would bring a specially valuable asset in the shape of his ability to give it an immediate footing in the foreign field with a list of about 1,000 trade correspondents and without the expense of preliminary work of organization and experiment.

Aside from the recommendations of his present employers he can furnish the best references and documentary proof of his abilities and past success. Address S. K., care MOTOR AGE.

1906 White, Model F; run 700 miles; perfect condition; no suitable winter storage. A. B. C., care MOTOR AGE.

When Your Motor No Longer

Handles the load, don't buy a new machine, but send motor to us. We know how to fit pistons and thoroughly overhaul motors. McCadden Machine Works, St. Cloud, Minn.

WANTED—A second-hand cylinder for Searchmont 1903 engine. Must be in good condition. State price. R. L. B., care MOTOR AGE.

FOR SALE—Detachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 30 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

1906 Olds, Model R; curve dash; blue and yellow; used but little. M., care MOTOR AGE.

FOR SALE—Model A Winton; run 500 miles; fully equipped; bargain for quick sale. C. E. Wilkins, Omaha, Neb.

1905 Model 6 C curve dash Olds; new paint and tires; just as good as new and looks it; top with it. K., care MOTOR AGE.

IF YOU are interested in an 18 H. P. Rambler, new equipment, write E. C. Chamberlin, Denison, Iowa.

Digitized by Google

WANTED TO BUY—From one to three new or slightly used delivery wagons or trucks from 12 to 15 horsepower double cylinder engines. Send complete description with price and terms. Kaliski Music Co., Ltd., Monroe, La.

PACKARD, 15 H. P., automobile, $200; complete with all accessories, lamps, horn, extra tires; in first class running condition. A. J. Houle, South East St., Holyoke, Mass.

FOR SALE—One 40 H. P., 1905, up to date Thomas Flyer. Has had the best of care and is as good as new. Extension top, glass front, 6 fine lamps, including 3 in swivel searchlight. Prestolite tank and Jones speedometer. Speak quick. Barclay Auto Co., 248-50 Third Ave. S., Minneapolis, Minn.

1903 Winton; completely overhauled; worn parts replaced; new paint; new 4½-inch rear tires; side baskets, etc.; $650. L., care Motor Age.

FOR SALE—Knox surrey; two-cilinder 16 h. p. engine, full leather top, all accessories; in first class condition; perfect running order; one of the finest cars ever turned out; lots of power; easy riding; perfect air cooled engine for all seasons and every kind of weather; a thoroughly efficient high grade car and will be sold at a ridiculously low price. If interested, write for full description. Knox Surrey, Motor Age.

EXCHANGE—Running gear with wheel steer complete. Want cape top for 1903 Winton or a motor cycle. 224 Park Ave., Newport, Ky.

FOR SALE—Olds runabout in good condition; consider no trade; a bargain at $275. R. M. Walker, Monroe City, Mo.

FOR SALE—Garage established with Winton and Cadillac agencies for 1906 at Spokane, Wash. Fine location and a good storage business. Will sell at invoice or will consider partnership. Address G. W. Miller, Broadway and Madison Sts., Seattle, Wash.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—Packard model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,000 if taken at once. Bates-Odenbrett Auto Co., Milwaukee, Wis.

ORIENT BUCKBOARD, 1905—Will sell or trade sfor auto or motorcycle. Addres "Orient," Motor Age.

POSITION as foreman or superintendent auto. repair shop, garage or factory. Six years' experience on all types. Posted on up-to-date shop practice. Cast systems. Box 20, care Motor Age.

FOR SALE—Single cylinder, 8 H. P. gasoline touring car; excellent condition, speedy and good hill climber; $300 cash or will trade for real estate. F. G. Hodell, 24 Cooper St., Cleveland, O.

FOR SALE—Late 1905 standard Oldsmobile runabout, with rear seat, traveling box, boot, storm apron and horn. Cost, with extras, $700. In prime condition. First $550 takes it. Hamlin Barnes, Wellsville, O.

CADILLAC—Remodeled Cadillac "A," new springs, canopy top, $250. Apply 350 Woodward Ave., Detroit, Mich.

WANTED—Two first class automobile repairmen. Steady position to right parties. Address H. E. Fredrickson, 1502 Capitol Ave., Omaha, Neb.

WANTED—A thoroughly up-to-date factory superintendent, well up on four cylinder construction, for large established plant. Good salary and excellent future. Enclose reference and salary desired. X. Y. Z., care Motor Age.

FOR SALE—Second hand automobile engines and transmissions for sale. One 10 H. P. water cooled, together with sun and planet type transmission and oilers, also one 4 H. P. air cooled; both in first class condition; at give away prices; write quick. The Logan Construction Co., Chillicothe, O.

THOMAS MOTORCYCLE, $75; need cash. H. O. Raymond, St. Cloud, Minn.

JUST ONE OF THE

1906 Logans

THAT CAR OF QUALITY

Simple
Light
Powerful

Comfortable
Strong
Beautiful

Model F. 10 H. P. Weight 850 lbs.

An Air-Cooled Runabout. Two-cylinder opposed, in front under hood, sliding gear, chain drive, ... **Fitted with a Gramm Silent Muffler.**

PRICE! Write and we will tell you, also complete details

Logan Construction Co., Chillicothe, Ohio

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—A 1906 White Steamer, side entrance, never used and absolutely perfect; owner leaving for Europe soon. J. M. Shelley, Omaha, Neb.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carburetors and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

FOR SALE OR TRADE—2 sections, 1,280 acres of good ranch land in Presidio county, Texas; will trade for automobiles. Alliance Motor Car Co., Alliance, Ohio.

FOR SALE—6 H. P. air cooled motor, $75; 10 H. P. water cooled motor, $85, new; 16 tube radiator, $10; hood, $12; McCanna 4 feed lubricator, new, $15; No. 10 Rose headlight, $12. Any of these parts sold separately. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Automobile, $150. C. E. Shook, Waterloo, Iowa.

WANTED—Man thoroughly familiar with Stevens-Duryea cars to take entire charge of repair department. State experience, references, age, salary expected, etc. Address S. D., care Motor Age.

1905 Model B Pope-Hartford; new; never used; $500. N., care Motor Age.

AUTOCAR, seats 4 people, in best of condition, for sale or exchange; merchandise preferred. G. Knabe, Apollo, Pa.

WANTED—Burner and regulator for flash boiler; also 8 to 10 H. P. gasoline engine with transmision and accessories. C., care Motor Age.

FOR SALE—1904 Winton with canopy top, plate glass front, 4 lamps and tools complete; guarantee perfect order; sell for $1,000. Wm. T. Sigler, Piedmont, W. Va.

FOR SALE—New 10 H. P. double cylinder machine, clincher tires, for 4 passengers, nearly completed; material cost $700; $300 takes it. New set of axles complete, artillery wheels, with clincher tires; $100 takes these. Box 158, Perry, Mich.

WILL TRADE quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

FOR SALE—Autocar runabout, excellent condition, $350; can be seen in Chicago any time. Address Box 15, Motor Age.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

NEW YORK AUTOMOBILE SALESMAN

Now branch manager, open to engagement Jan. 1st; exceptional qualifications and wide acquaintance throughout eastern states. Address Eastern, Motor Age.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

KINGSTON CARBURETORS

1906 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.

661-673 Beaubien St. DETROIT, MICH.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our Tom Tire Pump fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

RYBERG AUTOMOBILE WORKS. CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

MOTOR AGE

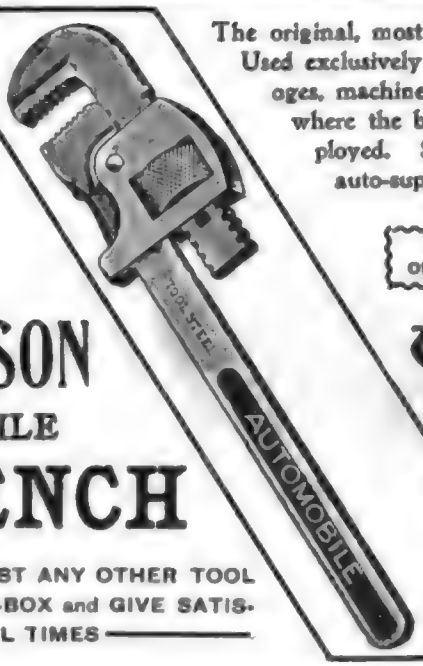
Gets the News
Get Motor Age
$2.00 a Year

309 MICHIGAN AVE., CHICAGO

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

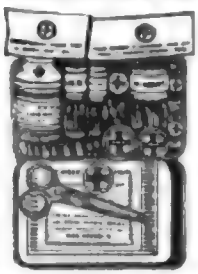
The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.

Boston Mass. U. S. A.

Protection for Automobilists

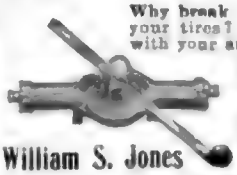


Sixteen articles in a metal case for everybody who is liable to injury. Bandages, Dressings, Remedies. Quality Guaranteed. Send us your address and we will send the case; if you are satisfied after examination, send us one dollar; if not, return the case at our expense. Every automobilist ought to have one. Send for circular

U. S. Emergency Case Co.
11 Beaver Blkg., Utica, N. Y.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

LEA TIRE PUMP



Why break your back to pump your tires? Pump the "Lea" with your arm—now with your back. Tires also last longer.

Write for illustrated book B and get our proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

DIAMOND CHAINS

Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co. 85
Adams Company 70
Adiand Motor Co. 80
American Battery Co. 84
American Coil Co. 77
Apperson Bros. 77
Aster Co. 78
Atwood Mfg. Co. 48
Austin Automobile Co. 70
Auto Brass & Aluminum Co. 85
Auto Directories Co. 88
Automobile Equipment Co. 84

Badger Brass Mfg. Co. 42
Baker Motor Vehicle Co. 57
Baldwin Chain & Mfg. Co. 76
Bausch-Lomb Optical Co. 81
Beaver Mfg. Co. 66
Billings & Spencer 86
Bloomstrom Motor Co. 44
Borbein, H. F., & Co. 83
Boston Auto Gage Co. 83
Bowser, F. S., & Co. 85
Brennan Mfg. Co. 73
Briscoe Mfg. Co. 70
Brown, W. H. 82
Brown-Lipe Gear Co. 68
Buckeye Mfg. Co. 70
Buckeye Wheel Co. 78
Byrne-Kingston Co. 57

Cadillac Co. of Illinois 80
Cadillac Motor Car Co. 55
Canedy, Earl 81
Carr, F. C. 66
Champion, Albert, Co. 83
Coey, C. A., & Co. 80
Continental Caoutchouc Co. 62
Continental Engine Co. 76
Continental Motor Mfg. Co. 86
Conps, C. W., Co. 82
Corbin Motor Vehicle Co. 61
Corwin Mfg. Co. 69
Cramp, Wm. & Sons, Ship & Engine Building Co. 77
Crawford Auto Co. 70
Cullman Wheel Co. 84

Daimler Mfg. Co. 62
Davis Robe Co. 58
Dayton Electrical Mfg. Co. 79
Dayton Motor Car Co. 67
Diamond Chain & Mfg. Co. 88
Diamond Rubber Co. 44
Dietz, R. E., Co. 65
Dixon, Jos., Crucible Co. 84
Dyke, A. L., Auto Supply Co. 84

E. H. V. Co. 50
Eclipse Buggy Co. 85
Edmunds & Jones Mfg. Co. 67
Eldredge Electric Mfg. Co. 84
Electric Storage Battery Co. 83
Electric Vehicle Co. 69
Elmore Mfg. Co. 72
Excelsior Supply Co. 80

Fairmount Engineering Works 80
Ford Motor Co. 51
Franklin, H. H., Mfg. Co. 34-35
Frazier, W. S., & Co. 84

G. & J. Tire Co. 56
Gabriel Horn Mfg. Co. 85
Garford Mfg. Co. 45
Gauss, L. T. 81
Gilbert Mfg. Co. 82
Githens Bros. 80
Goodrich, B. F., Co. 53
Goodyear Tire & Rubber Co. 60

Ham, C. T., Mfg. Co. 79
Hardy, R. E., Co. 84
Hartford Rubber Works 64
Hartford Suspension Co. 85
Hayes Mfg. Co. 77
Hayes Automobile Co. 54
Herz & Co. 81-86
Hofeller Brass Foundry Co. 79
Hoffheimer Soap Co. 73
Holley Bros. 80
Hussey Drop Forge & Mfg Co. 86
Hyatt Roller Bearing Co. 88

Imperial Brass Mfg. Co. 77
Importers Co. 80

Jackson Automobile Co. 56
Jeffery, T. B., & Co. Cover

Kimball, C. P., Co. 84
Kirchberger, M., & Co. Cover
Knoblock-Heideman & Co. 81
Knox Automobile Co. 75
Kokomo Rubber Co. 71

Leather Tire Goods Co. 84
Lehman Bros. 74
Lester, E. F. 84
Light Mfg. & Foundry Co. 78
Link Belt Machinery Co. 63
Lloyd Iron Roofing & Paint Co. 73
Lobee Pump Co. 81
Locomobile Co. of America 30
Loftis Bros. 62
Logan Construction Co. 47
London Auto Supply Co. 81
Long Mfg. Co. 85

McCord Co. 85
McDuffee Automobile Co. 80
Madison-Kipp Lubricator Co. 86
Matheson Motor Car Co. 68
Mead Motor Co. 80
Merkel Motor Co. 78
Metzger, C. A. 73
Michelin Tire, American Branch. 61
Miller, Charles E. 66
Miller Signal Co. 85
Milwaukee Steel Foundry Co. 84
Mitchell Motor Car Co. 38
Moline Automobile Co. 72
Monon 79
Morgan, W. J. 64
Morgan & Wright Cover
Motor Car Specialty Co. 88
Motor Car Supply Co. 85
Mutty, L. J., Co. 85
Myers-Dayton Top Co. 81

National Motor Vehicle Co. 49
National Spring & Wire Co. 85
Never-Miss Spark Plug Co. 86
Newmastic Tire Co. 82
New Process Rayhide Co. 77
N. Y. & N. J. Lubricant Co. 85
New York Gear Works 83
Nickel Plate Railway 85
Nordyke & Marmon Co. 74
Northern Mfg. Co. 74
Nyberg Automobile Co. 87

Olds Motor Works 40-41
Oliver Typewriter Co. 83

Packard Electric Co. 85
Packard Motor Car Co. Cover
Pardee & Ullman Co. 80
Pederson, J. T. 82
Pennsylvania Rubber Co. 58
Philadelphia Ornamental Wire Co. 78
Pierce, Geo. N., Co. Cover
Pittsburg Reduction Co. 85
Pittsfield Spark Coil Co. 75
Pope Motor Car Co. 36
Premier Motor Mfg. Co. 72
Prest-O-Lite Co. 69

Quaker City Automobile Co. 80

Railway Appliances Co. 85
Rainier Co. 53
Rajah Auto Supply Co. 82
Reo Motor Car Co. 41
Robert Instrument Co. 85
Rose Mfg. Co. 78
Royal Battery Co. 68
Royal Motor Car Co. 75
Rubay, Leon 85
Rubber Goods Repair Co. 80
Rushmore Dynamo Works 65

St. Louis Motor Car Co. 84
Saks & Company 86
Schrader's, A., Sons 76
Shawver Company 84
Shelby Steel Tube Co. 83
Skinner & Skinner 84
Smith, A. O., Co. 71
Spicer Universal Joint Mfg. Co. 84
Splitdorf, C. F. 66
Springfield Metal Body Co. 85
Standard Roller Bearing Co. 82
Steel Ball Co. 74
Stevens, J., Arms & Tool Co. 37
Stitch-In-Time Vulcanizer Co. 85
Stolp Mfg. Co. 77
Streit, A., Machine Co. 70
Supplementary Spiral Spring Co. 81
Swinehart Clincher Tire & Rubber Co. 65
Syracuse Aluminum & Bronze Co. 83

Temple, Ralph 80
Thomas, E. R., Motor Co. 43
Thompson, Chas. A., Co. 84
Timken Roller Bearing Co. 60
Trebert Gas Engine Co. 71

United States Automobile Co. 80
U. S. Emergency Case Co. 88
U. S. Jack Co. 86

Veeder Mfg. Co. 76

Wabash Railway Co. 84
Walworth Mfg. Co. 88
Warner Instrument Co. 71-76
Way Muffler Co. 50
Wayne Automobile Co. 46-47
Weber, O. F., Co. 80
Weed Chain Tire Grip Co. 77
Weis, Mat 83
Welch Motor Car Co. 82
Western Tool Works 72
Wheeler, F. H. 84
White Sewing Machine Co. 67
Whitlock Coil Pipe Co. 67
Whitney Mfg. Co. 67
Willard Storage Battery Co. 83
Willis, E. J., Co. 83
Winton Motor Carriage Co. 39
Witherbee Igniter Co. 79
Wolverine Auto & Commercial Vehicle Co. 69
Wray Pump Co. 75

Digitized by Google

MOTOR AGE

VOL. VIII NO. 21 CHICAGO, NOVEMBER 23, 1905 $2.00 Per Year

A YANKEE JAUNT FROM PARIS TO NICE

WITH the weather man doing his best to bring on winter before the one day of the year when King Turkey reigns supreme, there is not much left for the motorist with touring ndencies well developed who is forced to stay in northern climes t to sink into the luxurious depths of the big leather chair in e smoking room of the club and with others of his kind dig up miniscences of the past summer and anticipate the joys that await n 6 months from now. If the motorist is of the other sex there left to her the diary to which she can turn and read extracts to r less favored sisters in the sewing circle or at the mother's meetgs. Probably no one will get more enjoyment out of such fanning es as Mr. and Mrs. Walden W. Shaw of Chicago, who spent the st half of the year of 1905 in Europe, driving where fancy willed d drinking in the beauties of France, Italy, Spain and England m the soft seats of a big 24-35-horsepower Panhard, at the wheel which sat Mr. Shaw, who works on the theory that if there is ng to be any road mishaps he prefers to have the control of car himself. However, a chauffeur—an American—accomied the party, and very useful he proved to be, looking er the car and keeping it in the pink of condition, which is of the essentials of perfect touring, according to experts.

To the stay-at-homes who forced to do their sightng through the eyes of ers, this jaunt seems alst ideal. The Shaws made ris their rendezvous and er completing all prepaions for their trip in the y French metropolis, arded the big car and d to the south of nce to Nice, which they de their headquarters d from which point they de their excursions into dy and Spain. Little ss Shaw and her nurse re left in the villa in ce while the grown-ups nt on their sight-seeing ps through the historic ntries surrounding them. this way it was almost e being at home with rope at one's own door.

A member of the Automobile Club of Nice, Mr. aw took the precaution fore leaving Paris to tify himself with a French license. After he had passed through this ordeal he no longer wondered why the French have the reputation for having the best drivers in the world and why such high speed is permitted in that country. The reason was apparent—no one received the O. K. on his motoring passport until he had thoroughly convinced the authorities that he knew his car and was fully competent to be trusted on the magnificent highways of Europe. The first step necessary in this ordeal was to apply for a license to the minister of mines, stating the power of the car, when built, the speed it was capable of developing, the number of teeth on the sprocket and many more questions of similar character, so that the authorities had all the data at their command. In due course of time Mr. Shaw was visited by an expert sent by the minister of mines, who took the American out on the road in order that he might demonstrate his ability. For 15 miles Mr. Shaw was on the rack. Up hill and down dale the big car went, quick stops being made occasionally, while he was also asked to demonstrate the command he had over his car on the hills. After this came a wait of a week and then the license, which was the open sesame to the joys of motoring outside Paris. On the card was pasted a photograph of Mr. Shaw and armed with this documentary evidence of his ability to handle an automobile, he had not the slightest difficulty with the authorities in other cities. The one license was enough for all Europe, although nearly every country has a law similar to France's.

COMING OUT OF THE SHORT TUNNEL NEAR AUXERRE, FRANCE.

As might be expected by the severe examination, every driver Mr. Shaw met on the road knew his business. It was a safe bet that the man you were approaching was going to stay on his side of the road and the strain one runs across in this country, where it is necessary to do a certain amount of mind reading and guess what the other fellow is going to do, was done away with—all that the tourist had to do was to pay attention to his own steering.

Fully equipped in the way of license and supplies and with the

Digitized by Google

big Panhard in trim for the trip, the Shaws left Paris January 18 for a run down to Nice. It was a cold day, but the sun was out and the sky of cerulean hue. Paris was left by way of the port de Choisey and outside the gates a stop was made to lay in the stock of gasoline, which is much cheaper outside the walls of the big city than inside. Choisy le Roi was the first town reached, then came Villeneuve, where the Seine was crossed. Outside Villeneuve the Americans got their first experience with pave—pronounced pauvay—a road made of square blocks of stone, each about a foot square, that have been there for hundreds of years. The pave looked a good deal worse than it is in reality, and it was not long before they were rewarded by reaching the magnificent macadam roads they had heard so much about. They found them fully up to expectations—just like glass, well graded and drained by ditches, while on each side of the highway were double rows of tall, beautiful trees, which in places met above their heads, forming arches of verdure for many miles.

From Villeneuve to Melun, a distance of about 15 miles, they found the road perfectly straight, without a suspicion of a turn. At Melun the Alonet river, which empties into the Seine, was crossed, the road passing through Sivry, La Chatelet and Valence en Brie, finally reaching Montereau, where the Seine and Yonne rivers were crossed and the southern bank of the Yonne followed to Port sur Yonne, where the river was again crossed and the northern bank taken to Seus. Here the road was perfection, outside of the fact that there were some sharp curves. Following the twistings and turns, the tourists had spread out before their American eyes a grand panorama of country, the hills and valleys checkerboarded off in little patches representing the different crops, each laid out with a park-like regularity that added to the enjoyment of the scene. Another river was crossed at Seus—the Vanne, which empties into the Yonne. Then the road passed through Villeneuve sur Yonne to Joigny, where the tourists decided to take the lower course through Auxerre and Avallon to Dijon instead of going north through Tonnerre. They found the southern route more hilly, but were rewarded by grand scenery. The road from Joigny to Auxerre made one turn which ran a distance of some 15 miles, and Auxerre reached at 5 o'clock. As it was almost dark then, it was decided to make the stop for the night at this point. The party put up at the Grand Hotel de la Fontaine, where, they were told, Napoleon once slept. The distance covered during the day was 105 miles.

The second day's trip was from Auxerre to Beanne, a distance of a trifle over 106 miles. The Americans were away to an early start, 7:15 o'clock finding them on the road, which almost immediately took them into the mountains, their first experience being a passage through a tunnel. At Avallon they asked a woman in a donkey cart the way and were misdirected, making the complete circuit of a mountain and again bringing up at Avallon before discovering their mistake. This made a difference of 25 miles, but finally the national highway was picked up again and followed to Precy. On the way they ran into a severe snow storm in the mountains, so that the shelter of a snug brasserie or cafe—where the food was nothing to brag about, the tourists finally taking the remains of the meal and feeding it to the dogs—was enjoyed. Then the trip was resumed, Dijon being reached about 4 o'clock in the afternoon. Not satisfied here, the Shaws determined to push on to Beanne. They found it like a Peary excursion to the north pole, the roads being covered with 3 inches of snow. But a passage through the beautiful land had been ploughed, so the going was not bad. The last 10 miles or so before reaching their destination were made in darkness, so that the big acetylene lamps were brought into use, throwing beams of light 200 yards ahead, making travel comparatively easy. The hotel at Beanne was small but comfortable and here the tourists had their first experience with candles, gas not being available. The distance for the day was 131 miles, which put them 211 miles from Paris.

Leaving Beanne early the next morning the tourists found that the snow of the night before had been first converted into slush, then frozen, so that it was difficult work to keep the Panhard in the path. Passing through Chagny, Chalons was reached and here a stop was made to lay in more gasoline and oil. From here the banks of the Soane were followed over a rolling road until Tourims was reached. Here they passed a Fiat carrying two men, with the results that there were several lively brushes along the broad highway. Through Villefranche and Limonest they went, the Panhard some ways ahead, until finally when the Shaws stopped to take a picture of a perfect road, shaded on either side by magnificent trees, the Fiat passed and was seen no more, Lyons being its destination.

It was a beautiful bit of scenery along here, the mountains on both sides being covered with snow. If it had not been for the melting of the snow in the low country and on the road, it would have been impossible to have made the time the Americans did. About here they started a steady climb over the mountains for Lyons, a distance of about 6 miles, the road winding around the cliffs, with an abrupt descent into Lyons, which was made with the engine disconnected and the big car coasting along as easily as a boy sliding down hill on a bob sled, and with not much more noise.

After an hour's stop in Lyons, the journey was resumed, the Marseilles road being followed. This took them up the mountains again in order to reach the Rhone valley. All the way to Vienne it was hilly, with deep snow on the hills and with the valleys green with verdure.

Ideal touring conditions were discovered from Vienne to Valence, the roads being about 50 feet wide and paved with macadam. Here was found the carniveau, which is a ditch about 18 inches deep and about 6 feet wide, with sloping sides, paved with stone, a relic of the middle ages, and intended to keep the spring torrents from the mountains on the side of the road from washing out the highway. There is no danger if one takes them slowly. About 200 yards on each side of the road is a T. C. F. danger sign, put up as a warning for these ditches. Racing with trains and following the Rhone, the Shaws still found time to admire the ruins of old castles on the hill tops. Darkness overtook them at Tain and the lights were called into play, with the result that Valence was reached at 5:45 p. m., where the tourists put up at Hotel de la Croix d'or for the night. They had traveled 180 miles that day and were 391 miles from Paris, with two more days' journey ahead of them before reaching Nice.

The next stage of the journey was far from being as pleasant as the preceding ones. It was cold, the wind was sharp and penetrating and there was a white frost over everything. But the Chicagoans were game and pushed on, reaching Montelimar and then following the valley of the Rhone.

Old Roman Aqueduct at Frejus
Historic Ruins Along French Highway

Digitized by Google

At Orange they ran across a historic old Roman arch which was promptly cameraed, then the Chicagoans drove to Avignon, where is located the palace of the pope. They went through the palace, cathedral and the beautiful gardens on the high hill. The next town on the route was Aix en Provence, which was reached about 3:30 p. m. through the valley of the Durance. At this point they took to the mountains again, Brignoles being their stop for the night. One hundred and forty-nine miles were covered that day, leaving the party 540 miles from Paris and 80 miles from Nice.

Not much of a trip was left for the last day. At Frejus a stop was made to secure photographs of the aqueducts and the old Roman arena. Here the tourists crossed the Estrelle pass between Frejus and Cannes, then hurried along through Cannes, Antibes and finally Nice was reached at 11:30. On the promenade des Anglais was a sight that gladdened the mother's heart and in a jiffy little Miss Shaw, cart and nurse were picked up and bundled into the car, which whirled the reunited family to its villa on the Place Angliecane, which was made their headquarters while they were in this part of the country and from which started those jolly little excursions into Italy and Spain.

"Our plan of making Nice our headquarters and from that point taking little jaunts into Spain and Italy was as near perfection as a touring automobilist could well desire," said Mr. Shaw. "In that way we always had a comfortable home to return to and the trips did not tire us the way they would if we had simply wandered around. We had some trouble locating in Nice, though, for it was hard to find a villa that had modern conveniences. Finally we hit on a snug little villa on the Place Angliecane, built by an Englishman, and boasting one of the very few bath rooms in the city. We arrived in Nice in time to take in the carnival, and a grand sight it was, I assure you.

Cathedral Located at Sens, France

One of the Roads Running Out of Nice

"On some of our little rambles we saw some of the finest bits of old architecture in Europe. For instance, at Nimes we ran across the Maison Carré, which was built by the Romans before Christ. It has never been renovated and is undoubtedly the finest bit of Roman workmanship remaining. Then there are the old Roman baths with the bottomless springs. Just outside of Nimes is one of the real curiosities of the trip—Aignes Mortes, a walled town which, in the old days, must have been a regular Gibraltar. Surrounding the town is one huge swamp, which would effectually shut off the enemy. Of course, there has to be some way to get into the place, and that is provided for by a beautiful road, which runs through the swamp in a straight line. But the builders of the fortress were wise enough to make the place safe and some distance before you get to Aignes Mortes you find a huge tower dumped down across the road, effectually barring off approach if the defenders of the town so willed it, for the swamp acts as a barricade in any other direction.

"One of our favorite runs was from Nice to Monte Carlo. It is an easy little trip, taking just about as long to make as it does to run out home from down town. We'd do it in about 25 minutes and along the road to the resort you experience the true joys of fast driving on magnificent highways. Every man you met knew his business, leaving you free to look out for your own car. You can readily appreciate how much this lifts off your mind. The road is smooth and the curves can be taken at top speed without danger.

"All through our tours of Europe we had few mishaps. Only once can I remember that we even got a scare. That was in England and was occasioned by the rules of the road there, which require the driver to keep to the left. This law may sound queer in this country, where we are all used to staying on the right side, but I daresay our way looks just as funny to John Bull. This left-hand style has been handed down for centuries. It seems that it originated with the rule requiring the owner to have his name painted on the right side of his rig, so that in case of accident his identity could be readily learned by the people on the sidewalks. So, all the time I was running from Folkestone to London I kept saying 'left' to myself so I would not forget the change of style of driving.

"The roads twist and turn along this route and are very narrow, but I had been progressing fine. Then we struck one long, sweeping curve, one so big you couldn't see the people coming from the other way. I was bowling along some at that, and just as I struck the crest of the curve I saw another car coming about as fast as I was, and I became a bit mixed right here and just missed hitting it by not more than a foot. That certainly did impress the left idea on my mind and I guess I will never forget it as long as I motor.

"Driving through Italy in the southern part of the country we struck roads far different from those up near France. The highways there are repaired by simply dumping loose rocks into the ruts and letting the traffic wear them down. You can imagine how this works. There's always two deep ruts far worse than any of our street car lines in this country and once you got into them it was hard swinging out again to pass anyone. This often led to vexing experiences with the country people who take things so easy. We'd come across a vehicle traveling to town with the carter fast asleep, so that often we had to cut down the speed to a snail's pace and follow until the driver happened to awake. He knows how to take it easy, too, for his cart is equipped with a swinging bed, much on the same style as these swings on porches of country homes here—four chains running down, one from each corner of the wagon and holding a platform upon which the driver stretches himself for a snooze. The horse knows the way and even if he doesn't the deep ruts hold him to his course, so all his owner has to do is to start the animal and then go to sleep.

"In Italy we did not follow the routine by keeping to the coast line, as many of the other tourists do, but cut up into the country into the lake districts, thus enjoying trips that are denied to most motorists who travel through Italy. The roads there were, most of them, built by Caesar and he built them for keeps. As a rule they run as straight as an arrow and such a thing as a mountain does not cause any deviation in the route—the road either runs through the mountain or else goes around it.

"In Italy they sell gasoline by the pound and one place it cost me $18 for about 25 gallons. It is not hard to get, though, for motoring is so universal that nearly every hotel and shop has a supply on hand.

"That long trip made America look pretty good to us when we struck New York and at the present time I am well satisfied to stay at home, although I have been thinking strongly of joining a party of friends for a winter in Jamaica."

Digitized by Google

BIG ENGLISH SHOWS IN FULL BLAST

Olympia and Stanley Exhibitions Opened—French Makers Much in Evidence—Some of the New Things in Construction On the Other Side of Atlantic

London, Nov. 17—Special cablegram—According to schedule England's two shows opened today—the big affair promoted by the Society of Motor Manufacturers and Traders in Olympia hall, and the other exhibition in Agriculture hall. Of course more interest centered in the former, for the Stanley show does not pretend to enter into competition with Olympia, its exhibits being confined mostly to motor bicycles and tri-cars, which are barred at Olympia. The Stanley also has a fair number of car exhibits, but these are restricted, as in former years. Sir Albert K. Rollit, M. P., officiated at the Stanley opening.

The fourth annual show of the Society of Motor Manufacturers and Traders opened this morning in Olympia hall under the patronage of King Edward and the prince of Wales; thus in a way stealing a march on the Paris salon and showing the French that there are others, to use an Americanism. The show closes November 25. It was a brilliant opening, the huge buildings being magnificently decorated and every inch of space filled by the very latest things in motor construction. There were 300 exhibitors ready for the crowd when the doors swung open, of which fifty-one represent foreign makers. One hundred firms are showing cars, thirty-five have commercial vehicles, twenty-six have motor boats, while the rest is made up of people who make bodies, tires, accessories and machinery. It was a most representative show and had fifty-two more exhibitors than last year's affair. The annex is a small show in itself, 10,000 feet of additional space being secured by removing a number of pillars and building a new roof on the building.

For the first time an English show has the cream of the French makers exhibiting their new cars a full month ahead of the Paris salon. While it is clearly apparent that the people from across the channel are not showing every new thing they have up their sleeves, still the strong support they are giving Olympia is a victory for John Bull and will no doubt be a strong argument for the English show opening this early from now on.

Even at this hour the show is most complete, despite the handicap English manufacturers have been placed under by the short time in which they had to get up their 1906 models. There was an extremely short space, from the manufacturers' viewpoint, between this show and the last one and few expected to see so many completed new models as there were on the stands when the building was thrown open this morning. Of course, there are quite a number of incomplete exhibits, but that was to be expected, but on the whole the show is a credit to the promoters as well as to the exhibitors who have as yet hardly recovered from the retail selling season.

As one walks through the vast buildings the new wrinkles for 1906 are most noticeable. Probably what impresses the observer most is that the designers have gone in more for comfort than in previous years, that there has been a general increase in horsepower, that ball bearings have come into greater popularity, that there has been a radical departure in the abandonment of the engine under the hood on the part of some, that more firms are using shaft transmission and final gear drive and that there has been an increase in the size of the wheels.

London, Nov. 11—The British motor trade is too busy even to talk. The reason is that Olympia opens in 4 working days from now, and, as usual, everything has been driven so late that quite a number of exhibitors don't know what they will or will not have on view. The building has been in the hands of the Society of Motor Manufacturers and Traders since November 1, but the raised dais, upon which all exhibits are staged, had to be laid down, so that it was November 6 before the earliest exhibitors could obtain entrance, and even yet one can only see a chaos of properties and scenic effects half disclosed. But cars will begin to arrive on Monday and then, in the words of the poet, we shan't be long. Hitherto the society has simply thrown open its doors about midday and let the show open itself, but it is felt that the importance of the industry and its claims should have some more public recognition. Accordingly the promoters are endeavoring to obtain the presence of the prime minister at a formal function and if this is achieved the customary public ceremony will be enacted and the exhibition, which is under the patronage of the king and the prince of Wales, blessed and toasted and all that.

Body design has evidently been given much careful thought this year, for it is noticeable that the comfort of the passengers has been looked after. In the line of covered carriages there is a double landaulett, with inside capacity for four passengers. This type has been taken up by the British firm of Argyll and by the French firms of Mors. C springs, too, are played up prominently by S. F. Edge, representing the British industry, and by Charron, Girardot & Voight, from the other side. Considerable favorable comment is heard on all sides for the Napier springs, which are declared to be most luxurious. They combine the three-point suspension of the transverse spring with the S spring and leather braces of the old barouche.

STEERING CONNECTIONS OF THE CROSSLEY

Most striking is the abandonment of the bonnet in front and the placing of the engine under the driver's seat. This, however, is found only in covered carriages, particularly in the new Napier landaulet and a town brougham brought out by the Mors company. Critics who have inspected this innovation are inclined to think that this movement will gradually extend itself to other types, although it is thought it will be a long time before the engine will be moved from in front of the high-powered touring cars.

None seems to be able to get away from the high power fever. Even the conservative ones who start out by declaring they intend catering only to the big demand for small, light cars inevitably drift into the manufacture of something big. Striking instances of this are found in the case of the Albion Motor Co., which is making a 24-horsepower car, while the American Oldsmobile is another example. The latter, hitherto prominent for its runabout, has for 1906 a four-cylinder 20-horsepower car and also a two-cylinder 12-horsepower rig. Legros & Knowles, who have heretofore confined themselves to the small car, are in line with 25-30-horsepower and 35-40-horsepower machines, and the Duryea has advanced from 12-15 to 15-18.

One of the points upon which a very large amount of alteration and innovation is observable is the clutch. The leather faced cone type is, generally speaking, relegated to the cheap car; the laminated, or disc, type is found in the largest and most costly cars in which professional pride has not operated to prevent progress. The laminated clutch, after a year's debate and test, has won all along the line. Its expensiveness is its only principal drawback. It adds considerably to the cost of a small car for it must be made really well or left alone. There are at the moment only two leading clutches of this kind in use—the Hele-Shaw and the Bradley. The Hele-Shaw is the older and more popular, but the Bradley is quite as good and has a more positive disengagement. This in the Hele-Shaw is secured by small flat springs arranged between the discs. In the Bradley it is secured by a series of stop pins

Digitized by Google

penetrating all but the particular disc each governs, three pins being provided for each plate. It is a difficult operation to describe clearly, but briefly the action of each set of three pins is to push its particular plate out of engagement when the clutch pedal is pushed down. The Argyll, Arrol-Johnston, Clement-Talbot, Dennis, Gladiator, Beloze, Albion, Armstrong-Whitworth and Bell Bros. use them.

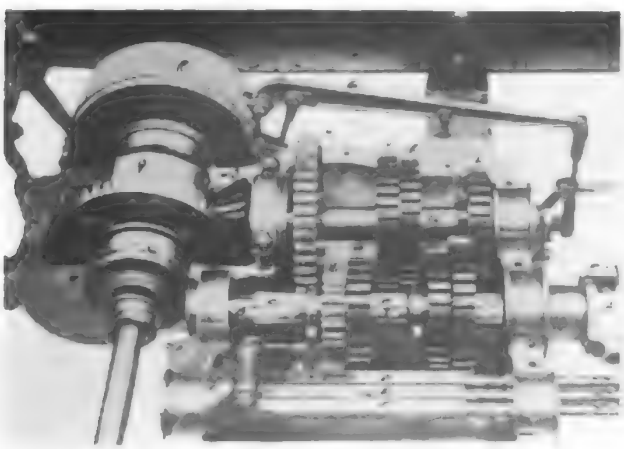
On the de Dietrich and a few others of similar type it is apparent that a lesson has been learned from the horizontal engine, for here spectators will find both sets of valves on the same side of the engine, which works all the valves on a single camshaft. Ball bearings are more prominent than ever, principally in connection with the bearings of the gear shafts. The Dennis people fit balls also to the worm pinion, as well as to the axle and front hubs. The Royal Enfield has ball bearings fitted to a live axle in the new model of its touring car. The Argyll folk are fitting their gear bearings with rollers. While each faction is claiming superiority, it is evident that there is a tendency to substitute sliding for rolling friction.

Shaft final transmission and gear drive, too, are prominent on the new models, the most prominent convert being the C. G. V. There is also a tendency to use larger wheels as well as tires. In regard to the latter, it seems to be the general opinion that it has been clearly demonstrated that one of the chief causes of excessive tire wear has been the use of tires too small for the weight they are called on to carry. Therefore, the Albion with 5-inch tires on all its four wheels will be one of the sensations of the show. Thirty-four-inch wheels will be seen on all sides in marked contrast to the early style, when few cars had anything over 30 inches.

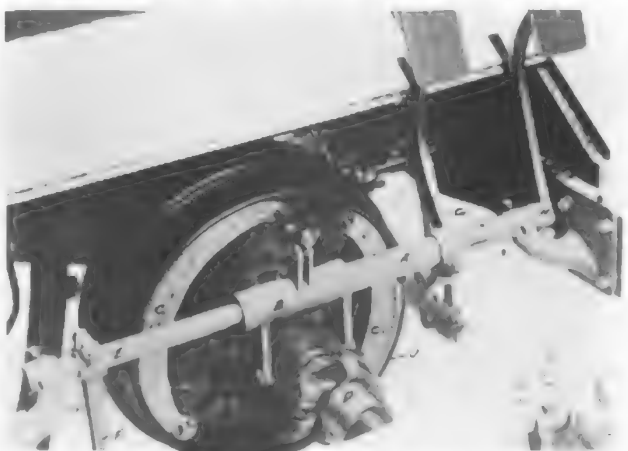
The introduction of the side entrance tonneau has been the means of permitting the placing of luggage racks in the rear, something that could not be put on with the rear entrance. This idea, however, is not new, although several cars now have the entrance from the side. It is also noticeable that long wheel bases are not generally admired, although a necessity when the side entrance is fitted. Narrow roads and sharp turns have taught their lesson and many find it impractical to use a car with a long wheel base, finding that a shorter one is much easier to handle on the average country road.

THE CROSSLEY BRAKE

Few cars seem better constructed than the Crossley. The leading features of the Crossley are pressed steel frame cross-tied and reinforced at main angles, extra long hangers carrying extra long springs, thus giving a long body without unduly lengthening the wheel base. Mercedes practice is very pronounced in some features. The radiator and bonnet, the system of steering wheel control and the speed gears and change systems are all on Mercedes lines. But there are many purely Crossley features which are sure to be imitated for their excellence. The engine on both 22-28 and 40-horsepower models is four cylindered, with cylinders cast in pairs and valve pockets on opposite sides, both being mechanically operated. Low tension magneto is the system adopted, with vertical ignition rods made adjustable so that the ignition in each cylinder can be most accurately timed. Double springs are fitted to each ignition plate and bottom tappet lever arms are fitted with pillars to admit any fitting of springs. By adopting adjustable valve roller spindles the clearance between spindles and induction valve is reduced to a minimum, thus maintaining the valve open over the greatest period. In common with most other leading European designs ball bearings have been introduced into the gear box, steering gear, clutch and road wheels. The adoption of the Mercedes type of double gear-shafts has of course necessitated the adoption of the gate style of change speed lever quadrant. Unlike the new Mercedes, however, there is no through drive. The type of flexible joint between gear box and clutch is worth inspecting, as also are the connections between the steering pillar and the steering wheels. The after end of the steering rod is a distinct improvement on the usual ball joint and the whole front carriage, with its block fan to eject from the bonnet the dust drawn through the radiator, and steering connections, ball bearing throughout even to the rod connecting the steering arms, is really well thought out. In the Crossley clutch the flywheel rim is made with a wide flange J forming a female clutch member, the male part consisting of a pair of expanding shoes C and C1 pivoted at their upper ends and with the lower ends attached to a perforated metal framework carried on the hub clutch. This frame work carries a pair of levers, expanded by a cone on the clutch shaft. When the clutch is engaged the expansion of the shoes takes place at the lower part of their faces, metal plates being embedded in the shoe faces, providing a removable friction surface. A coil spring K removes the shoes from the female part in disengaging. The clutch pedal G is fastened to the sleeve A, on which are two depending arms for moving the cone on the shaft. Within the sleeve A is the brake racking shaft E, carrying at one end the pedal H and at the opposite one the arm F, connecting by cable with the brake band. The shaft D with universal joint connects with the gear box. Following 1906 tendencies this box is made with four forward speeds and has the differential gear housed in a separate chamber at the rear end. Gear changes are made on the Mercedes gate system, three shifting units being employed. Ball bearings have been fitted in all of the main and countershaft bearings, as well as on both sides of the differential and to absorb end thrust. The main shaft B connects with the clutch at its forward end A and has the two sliding units, K1-L1 and H1-J1, held by four large feathers, half of the shaft surface being feathered. For top speed, drive to the countershaft is through the gears L1 and L, for third speed through K1 and K, through J1 and J for second and H1 and H on the slow. The former two speeds are

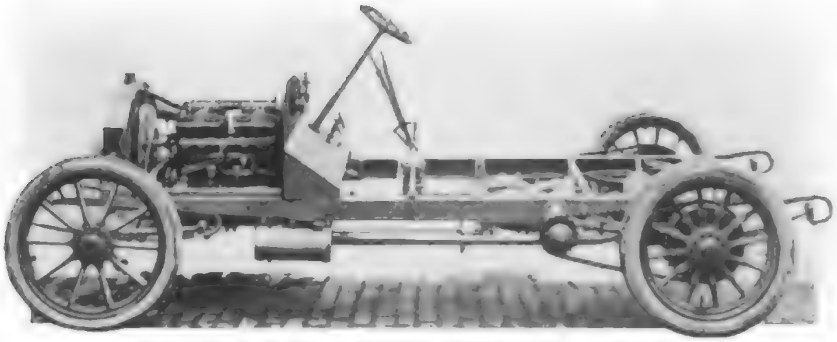


CROSSLEY SPEED CHANGE GEAR AND DIFFERENTIAL



CLUTCH AND CONNECTIONS ON THE 1906 CROSSLEY

Digitized by Google



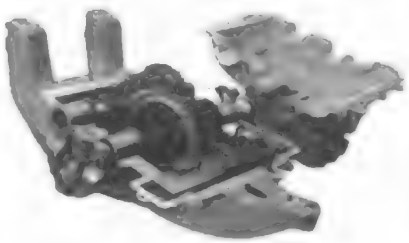
THE 18-22 HORSEPOWER CROSSLEY CHASSIS

gained by the shifting rod F with arm connecting with the gears and the second and first speeds through the shifter E and a short arm which is shown. For reversing, the rod D with its arm coupling with the gear M is used in moving this gear into mesh between H1 and H, it having sufficiently wide face to mesh with both when they are in the positions shown. Both the pinion O on the end of the countershaft G and the bevel P on the differential are supplied with end thrust ball bearings, the differential Q uniting the two drive shafts forming the jackshaft. On this shaft at the left of the gear box is a contraction brake for regular use, the band R being operated through the lever C, which is connected with a good sized footboard pedal.

The Arrol-Johnston 12-15-horsepower is the commercial outcome of the Tourist trophy race and some of its features are worth noting specially. The gear box has four speeds, operated on the Mercedes gate system. The ratios are 6, 14, 21 and 30 miles per hour, the last being a direct drive. The gear shafts run on roller bearings. The coupling between engine and gear box allows part of the weight of the flywheel and clutch to be borne by the gear box roller bearing. The gear box has three-point suspension, the upper half of the aluminum gear box being easily removable without disturbing the shaft bearings. The universal joint for propeller is interesting. It consists of two rings, bolted together at angles of 90 degrees; four axial holes are bored to accommodate bushings, which form the bearing surfaces of two projecting lugs on the jaws of the gear and cardan shafts, respectively. The form secures that all driving effort shall not act as nearly as possible in one plane, thus maintaining a constant driving velocity throughout each revolution of the cardan shaft. To the rear end of the cardan shaft is fitted a combined spring and universal-joint drive.

For their contribution to the 1906 market John I. Thornycroft & Co. offer a 14-horsepower and a 24-horsepower, the former being four-cylindered, with all valves in the cylinder heads and each operated by a separate rocker. The complete shaft can be withdrawn for inspection, the crankshaft actuating the valve tappets being in a separate casing. The engine mechanism is lubricated by means of a gear-driven pump in the crank chamber, while the water-circulating pump and low-tension magneto are bevel-driven off a vertical spindle. Other features are a crankshaft with five bearings, pistons with four rings, automatic carbureter, friction clutch, spur-wheel type differential, a pedal operating on the metal-to-metal brake and a side lever on two V-shaped brake drums on both driving wheels.

Noticeable on the Winton model K is a four-cylinder engine with 4¾-inch bore and 5-inch stroke, with the cylinders cast in pairs, pistons with three rings, oil grooves in cylinders and pistons, while the crankshafts, pistons, etc., are removable without detaching cylinders. While the car



ARROL-JOHNSTON GEAR BOX

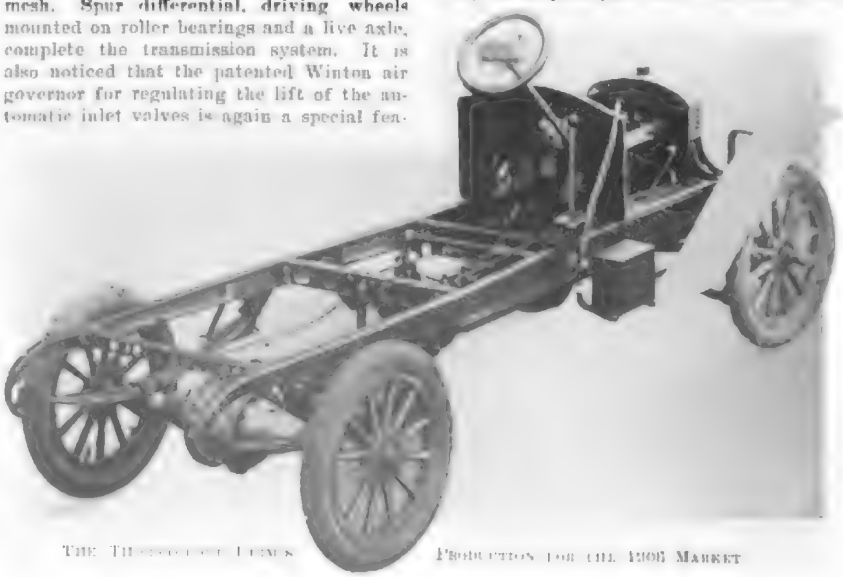
is fitted with high tension accumulator ignition there is provision made for a magneto. An eight-lead Hill Precision lubricator mechanically forcing the oil at a speed in proportion to that of the engine is fitted, instead of the roller oiler. In the gear box it is found that there are but two forward speeds. A reverse is provided, the gear wheels always being in mesh. Spur differential, driving wheels mounted on roller bearings and a live axle, complete the transmission system. It is also noticed that the patented Winton air governor for regulating the lift of the automatic inlet valves is again a special feature. Twin springs, laminated wood mudguards, 17-gallon gasoline tank and a side entrance body complete the details.

Another American car is the Oldsmobile, with two models—a 20-horsepower four-cylinder touring car, a two-cylinder vertical-engined 12-horsepower car, and the 7-horsepower runabout. On the big car is a vertical engine, pressed steel frame and all the latest devices in the details. Among the improvements noted are a ratchet brake, instead of the old differential brake; new type of external hub brakes, with steel bands and lining of camel's-hair belting; new water-circulating pump of four times greater capacity than the 1905 model and chain-driven off the crankshaft; steel tubular front axle, rearrangement of radius rods for driving chain to prevent the chain sagging on the differential casing, increasing flexibility of the long fore and aft springs, four rings to the piston, marine type of connecting rod in place of the old hinged pattern paraffin cup at cylinder head for easy starting, improved lubricating system, valve levers of forged steel, instead of malleable iron, and removable valve stem guides.

English buyers are taking a lively interest in the White steamer, of which there are the new side entrance 18-horsepower car and the double phaeton, with seating capacity for five people. There are also the car with the brougham or limousine body, and the landaulet.

One of the new cars is the Globe, made by the Hitchon Gear & Automobile Co., a four-cylinder 14-horsepower light machine, with the usual pump water circulation, accumulator ignition, expanding brakes and so forth. The feature of this is the patent Hitchon transmission gear, which gives three forward speeds and reverse.

The Enfield people have brought out two brand new models, one a four-cylinder 15-20-horsepower machine, with the engine crankshaft running entirely on ball bearing thrust blocks. An automatic carbureter, water circulation by means of a slow-running gear-driven pump, high tension accumulator ignition, special type of detachable clutch, which can be removed without dismounting the engine or gear box; three-speed gear box with shafts run-



THE THORNYCROFT CHASSIS — PRODUCTION FOR THE 1906 MARKET

Digitized by Google

Arrol-Johnston Brake and Universal-Joint Spring Drive

ning on ball bearings, girder section front axle, propeller shaft to rear live axle, new type of tubular radiator with over 1,000 circular tubes, external metal-to-metal brakes and pressed frame. Ball bearings are used wherever possible and the wheel base is 120 inches, with side entrance tonneau. The main difference between this and the other model is that the latter is driven by a 24-30-horsepower engine.

On the new Pipe the inlet and exhaust valves are both in the cylinder heads and are operated by exterior tappet rods, with overhead rockers. These are seen on a 28-horsepower car with a limousine body and also on a 50-horsepower machine. Outside of this the general details remain about the same.

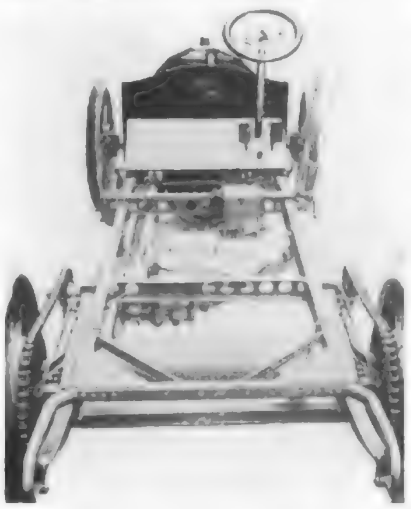
Frenchy is the word that well applies to the new cars of Charron, Giradot & Voigt, the C. G. V. cars having three-point suspension for the engine and separate three-point suspension for the gear box, internal expansion brakes, camshaft gear wheels enclosed, high tension magneto and ordinary accumulator ignition and improved design of chain tension rod. C springs will support the frame, an innovation for this concern, which is also bringing out a new model in a 14-horsepower car.

Unique among its fellows is a 40-52-horsepower Mors, which has seating capacity for eight persons. This French concern also has a town brougham with the 14-19-horsepower engine under the driver's seat, as well as a 24-32-horsepower double landaulet.

Handling the Albion for England and Wales, the Lacre Motor Car Co. is introducing a four-cylinder 24-horsepower car with canopy top, which is declared to be more suitable for winter work than the cape cart hood. There is a glass screen in front and similar ones between the center and rear seats, as well as many other devices that are appreciated by tourists. The two-cylinder 16-horsepower Albion carries seven passengers and the driver and is intended for country house work and shooting parties. Grooved solid tires are fitted. There is another 16-horsepower Albion with an especially long wheel base and double landaulet body, upon which many new things are introduced in the way of luxurious fittings.

Models turned out by Alldays & Onions' Pneumatic Engineering Co. all drive by live axles, have metal-to-metal expanding brakes and ratchet sprags. An 8-horsepower single-cylinder buckboard, three 10-horsepower two-cylinder rigs and a 16-horsepower four-cylinder car comprise the line this concern has for the forthcoming season.

Cars, magnetos and engines are the product of the Simms Mfg. Co., the frame of the cars being partly of the armored wood and pressed steel variety, which carry a 26-30-horsepower engine. There is the pressure-feed system of lubrication and also a new style of cut-out for the low tension magneto ignition. The Simms-Bosch magnetos, both of the high and low



End View Crossley Chassis

tension type, are made by this concern, as are engines ranging from a 2-4-horsepower single-cylinder air-cooler to a four-cylinder water-cooled 100-horsepower engine. On the big fellow the valves and seatings are detachable and are carried in the cylinder heads, with overhead camshafts.

The horizontal engine is played up big by James & Browne. In addition to their usual line they have brought out a four-cylinder 25-30-horsepower car.

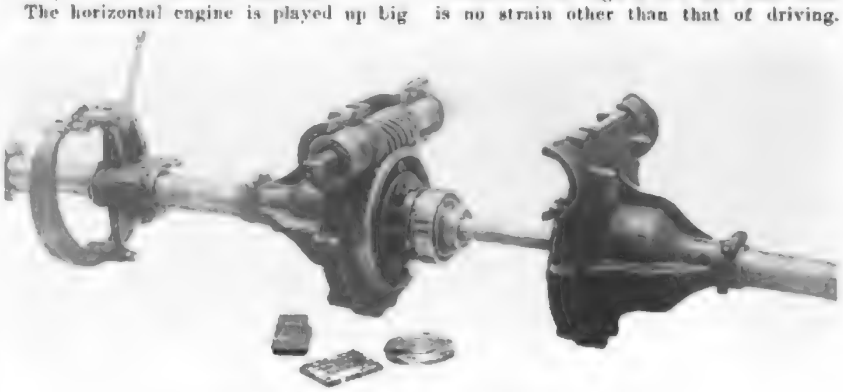
A new type of Aster magneto is being turned out by Aster in addition to four models of cars. Some improvements are noted on the Aster engine.

Four models of Argylls are on the market for 1906, the Scottish makers turning out a new four-cylinder engine made entirely in their works. Besides this they have something fresh in the way of a ball-bearing back axle and a metal-to-metal clutch. Among other things considered improved are a new worm, quadrant steering gear, a rear axle casing of the T type, ball bearings throughout, new striker for the clutch, cam action to the rear brakes in place of toggle, roller bearings in the gear box and dust and water shields to the bearings.

The Dennis worm drive is fitted to all types of motor vehicles from light pleasure cars to heavy buses. As shown in the illustration, A is the driving pinion on the differential. The driving pinion is on the differential, the worm pinion running between ball thrusts. The live axle is carried on ball bearings, and the whole is housed in a casing which connects with the axle casing, in which are the spring seatings, the latter forming a part of the brake spider, to which is fixed a double toggle to operate the brake drivers. There is also provided flow and return connections for forced feed lubrication to the worm and differential.

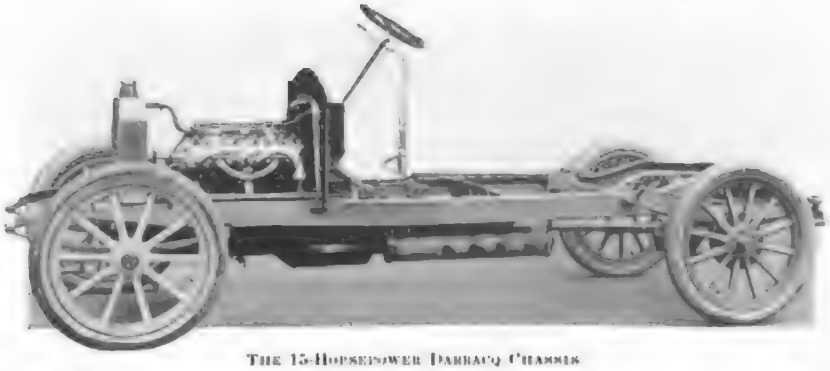
Minerva cars are 16-horsepower four-cylinder and 22-horsepower four-cylinder, pressed steel frames being used in both models. There is an undershield to the engine and gear and the drive is through live axles. Ball bearings are fitted to the gear box at all revolving parts. There is a slight droop to the frame in front which brings the radiator a little lower than the ordinary top of the frame. There is steering wheel control with a foot pedal operating the throttle. There is no pump for next year, the thermo-syphon system being relied on instead. The Eisemann high tension magneto, supplemented by accumulator and coil, is fitted.

Interchangeable camshafts, one on each side of the engine, are featured on the Chenard-Walcker cars, with the engine four-cylindered and of 16-20-horsepower. Direct drive on the top gear is secured and the gear is of the sliding type. Power is transmitted through a live axle and there is no strain other than that of driving.



The Dennis Worm Drive and Differential Housing

Digitized by Google



THE 15-HORSEPOWER DARRACQ CHASSIS

Then, too, there are thermo-syphon circulation, high tension magneto and pump-driven lubrication for other features.

Something new is the Bianchi, made by Straker & MacConnell, the models consisting of a four-cylinder 16-22-horsepower with side entrance double phaeton body; a single-cylinder 9-11-horsepower car with side entrance phaeton body and a two-cylinder engined motor cab with the engine under the driver's seat.

Synchronized ignition and a new Cupelle carbureter are features of the Cupelle line, while the four-cylinder 18-horsepower car has a patented lifting arrangement by which the whole of the underframe and gear can be examined. The light car is a 6-8-horsepower single-cylinder affair.

Talking points on the Singer line are many. In the six models, chief among them being a three-cylinder horizontal engine so constructed as to almost reduce angularity to a vanishing point. A direct drive is had on the second and third gears by an arrangement of planetary gears and clutches on one shaft, and the use of two side chains, only one of which drives for a particular gear. There is forced engine lubrication, one charge of oil being sufficient for 200 miles.

Aster parts, being interchangeable, are used throughout on the Whitlock-Aster cars, of which there are three types—two 12-14-horsepower and one 18-22. One of the former has a double landaulet body seating six passengers, with the rear portion so that it can be opened and closed at will.

Nothing smaller than a two-cylinder car will be made in the Belsize line. There is a three-cylinder engine capable of developing 18-24 horsepower, a four-cylinder 18-24 and a six-cylinder 30-40. In the three-cylinder there is a three-speed gear box to the live axle.

Separately cast cylinders, pressed steel frames of deep section, metal-to-metal clutches, ball bearings throughout, long springs and two push pedals, one operating the clutch and the other the footbrake, are featured on the Climax, of which there are two models—a 14-horsepower and a 20-22. Both the pedals act independently, so it is possible to use the engine for a break.

The Calthorpe Motor Co. has a new 20-horsepower model with a four-cylinder engine, ignition being by trembler coils and accumulators. A friction-driven centrifugal pump maintains the circulation and a fan assists the cooling system. The throttle control is on the steering wheel and the clutch is of the internal type.

Metal to metal has been abandoned in favor of the leather-faced cone type of clutch in the 35-horsepower car put out by J. W. Brooke & Co. Half compression cams are fitted, coming into action automatically when the engine is turned over. The 15-20-horsepower four-cylinder model has internal expansion brakes to the rear wheel and a pressure-feed oil tank on the dash and a single outlet to the engine crankcase. Low tension magneto is used and the throttle is the only control on the steering column.

While the Humber models follow ordinary lines, there are one or two bright features such as high tension magneto ignition and four speeds forward and a reverse. These are found on the 16-20-horsepower Beeston models. The Coventry type is a 10-12-horsepower light car with a four-seated phaeton body, the ignition here being by means of coil and accumulator. There are three speeds and a reverse, with transmission by cardan shaft and the foremost universal joint running in an oil bath. There is more rake to the steering wheel and ball bearings to the back axle and front wheels.

In the Peugeot line are a new 10-horsepower landaulet and an 18-horsepower car. In the former is a two-cylinder engine governed on the throttle and fitted with either magneto or high tension or both systems of ignition combined. There are four speeds and a reverse and direct drive on top speed. An automatic oiler is part of the equipment. The other model has a four-cylinder engine, the cylinders being all in one casting. It has mechanical valves and centrifugal governor.

Four vertical cylinders of 4-inch bore by 3-inch stroke and fitted with horizontal valves and low tension ignition are found on the Lanchester cars. The lubrication system employed enables the car to run 800 miles on one dose of oil. The Pugh-Lanchester patent radiator is a vertical cellular device, the cells being formed between two vertically ribbed sheets of metal fastened together at their edges.

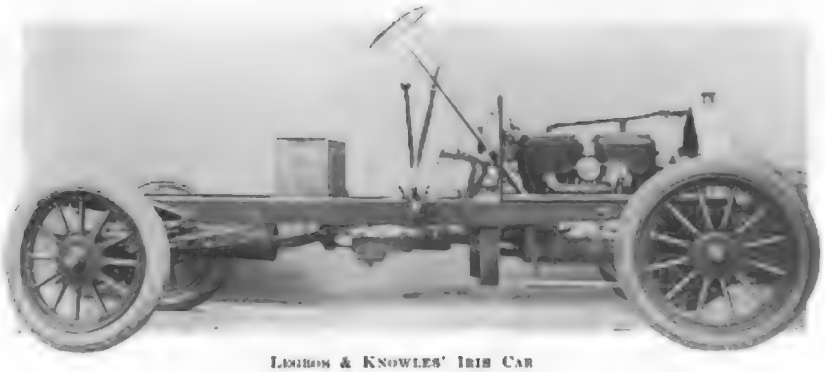
ROLLS-ROYCE DISCARDED

The most original type of car in the Olympia is the eight-cylinder Rolls-Royce landaulette, in which an eight-cylinder 20-horsepower engine is disposed below the driver's feet. In order to secure this, and also in order to simplify and cheapen construction, the cylinders are divided into two sets, inclined from the vertical at an angle of 45 degrees, and slightly staggered towards each opposing pair. The inclination, or, as it is generally called, reversion to the V type of engine, permits the adoption of a crankshaft in which the cranks lie in two planes, just like a four-cylinder engine crank—a very obvious simplification and cheapening in constructive cost. The staggering is induced so as to permit each pair of opposing pistons to work on the same crank. A peculiarity of the Rolls-Royce engine is that the valves are not inclined, but work vertically. Both induction and exhaust valves are set on the same side of the cylinder and mechanically operated. The sparking plugs enter the cylinder from the outer sides of combustion chambers.

Those with plenty of coin will appreciate the luxuriousness of the six-cylinder Napiers, one of the most startling models being a 40-horsepower car of the Pullman type of limousine body, placed on a 125-inch chassis, with room for five persons in the rear and two in the front seats. Two revolving armchairs take care of the extra two in the rear. There are incandescent lamps in the roof, hinged wood tables on the sides, windows that open and shut and silk roller curtains. A 40-horsepower touring car is so constructed that when it is necessary to examine or adjust any of the working portions the complete body can be run back of the chassis. Luggage is provided for by boxes on slides fitting beneath the front and rear seats. Tool boxes are above and below the steps. There is a cape cart hood meeting the front glass wind shield. Another model is an 18-horsepower four-cylinder landaulet, while there is also on the boards a new six-cylinder 60-horsepower touring car.

It is announced that the Gladiator people will discontinue the practice of making a standard complete and will only turn out the complete chassis, which can be fitted with the customer's own idea in the way of a body. The company, too, will make its own four and six-cylinder engines hereafter. Nickel steel shafts are found in the gear box and ball bearings are used everywhere. A multiple disc clutch and the gate change-speed device are used. A foot accelerator governs the engine and the throttle lever is controlled by the clutch pedal, so that throwing out the clutch throttles the engine. On the four and six-cylinder cars the Ginnoli high tension magneto is used, permitting of ready starting, the additional coil and accumulator being a reserve system of

Digitized by Google



LEGROS & KNOWLES' IRIS CAR

ignition. Chain drive is found on the big cars, and the cardan drive is used on the others.

One cannot look at the de Dietrich models without seeing the new ideas which bristle forth. One camshaft looks out for the valves, which are all on one side of the engine, and the covers over the inlet valves form the ignition plates for the low tension igniters. The ignition plugs are at the top, instead of the sides. Instead of a honeycomb radiator there is an improved type of gilled tubing, and instead of being belt-driven the lubricating pump is driven mechanically. There has been a shaking up in the gear box and it and its gears have been remodeled, the gears now being of the sliding sleeve type, with the gate motion for the lever, but having the locking arrangement in a separate box. Gear shafts run on ball bearings, the brakes are internal expansion, the steering joints are adjustable, there is a pressure feed for the carbureter, with a hand pump on the dashboard, instead of the auxiliary tank found in the 1905 product. High tension magneto ignition, ordinary type of sliding spur gear wheels and leather-faced cone clutch are features of the 12-15-horsepower cars.

Some 300 pounds have been taken off the weight of the de Dion 15-horsepower model, which is a four-cylinder car with side entrance and double phaeton body. Each model, except the 8-horsepower machine, has gear boxes with sliding spur gears. The exception, the 8-horsepower, will be built on a tubular steel frame and the others of pressed steel pieces.

The Legros & Knowles car is one which has attracted some attention from British experts by reason of its soundness and the variations in its designs from last season as to induce enquiry regarding the causes for such. One of the main alterations is the substitution of live axle drive for chains on cars as large as 30 and 40 horsepower. A straight membered pressed steel frame is adopted, which naturally cheapens production somewhat. The axles, however, are novel, consisting of stout gauge tubing. The front axle is fitted with a core of solid ash. The rear axle is split to run into a differential casing in the center and carries ball-bearing axle boxes on the extremities. The differential gear is introduced by means of a large port in the rear of the casing and is accordingly capable of being dismounted if necessary without disturbing any other portion of the gear. There is nothing particular in the design of the four-cylinder engine save that the camshaft, which operates all valves, is fitted in a oil tight box, which can be removed from the engine by simply dismounting a few bolts and without disturbing any other portion of the gear. The Panhard change speed gear system has been abandoned for the Mercedes, as this gives shorter and stiffer gear shafts, but, of course, necessitates the gate system of change speed lever quadrant, since there are two separate change motions with the one lever.

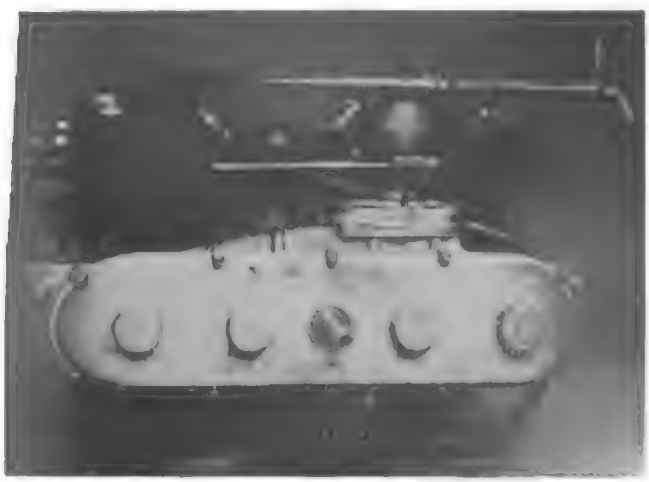
Motor cycles and tri-cars, which form the main excuse for the Stanley show, are far more popular in Great Britain, and the continent than they are in America. The Werner people are making two models of motor cycles—3¼ and 4-horsepower twin-cylinder models. It is noted for 1906 there are larger gasoline tanks and wider mudguards, with ample clearance. Besides there are a couple of single cylinder models of 2½ and 3-horsepower. It is possible to get high tension magneto if one is desired, while the Werner spring fork is fitted to all models. The company also has a two-cylinder 5-horsepower tri-car.

The Triumph is of the 3-horsepower class, ball bearings being retained, while several improvements have been made in the engine. The Rex Motor Co. has a line of twenty motor cycles and Rexette tri-cars, as well as the new Aster 18-22 horsepower car. On the cycles there are the duplex spring fork, new muffler, vibrationless frame design, patent foot brake, enclosed spray carbureter and invisible push and pull levers. There is also the Rex triotte, a light two-seated machine fitted with twin-cylinder 5-horsepower motor.

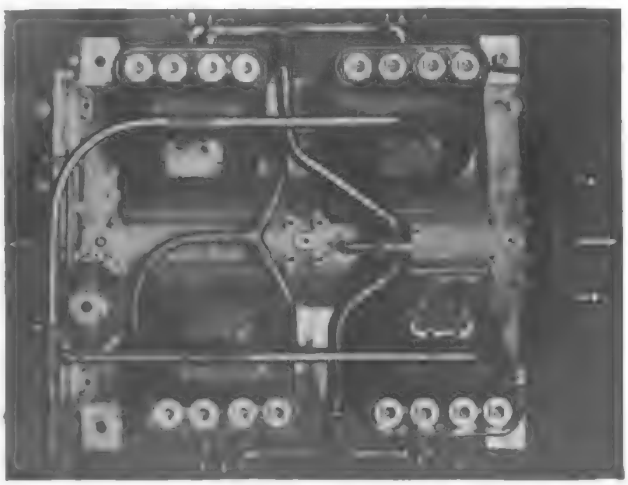
A four-cylinder 3¾ and 3¼ machine is the Durkopp motor cycle, one of the former being fitted up as a tradesman's carrier. The motor has a novel system of magneto ignition and there is also a laminated spring fork of merit. One, two and four-cylinder models of the Kelecom motor cycle are made by the Crypto Car & Cycle Co. The 4-horsepower cycle has band brakes on both wheels, while the other two have bevel gear drive and magneto ignition.

Among some of the most prominent devices in the motor cycle line are the Pullman non-skid band, the Lithanode accumulator, the L. A. C. spring fork attachments, the Watawata belt, Coan's aluminum castings, and a new form of trailer which, it is claimed, can be detached in 60 seconds.

Motor car and motor cycle accessories, bristling with innovations, are met with on every machine to be exhibited. New coils of the single and multi-vibrator class are common, spark plugs in every variety are encountered, and low and high tension distributors have their usual following. Centrifugal pumps in endless design are encountered, and carbureters in every conceivable form are used.



END VIEW ROLLS-ROYCE EIGHT-CYLINDER MOTOR



TOP VIEW ROLLS-ROYCE MOTOR, SHOWING PIPING

Digitized by Google

MOTOR AGE

New York Office
29 West 42d Street
London Office—
American Publication
Bureau 55 Manor
Park Road Harlesden,
N.W.

309 Michigan Avenue
CHICAGO

Published every Thursday by the Trade Press Co·N·H Van Sicklen Manager·Telephone Harrison 4410

Member National Association of Automobile Manufacturers Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year·Foreign subscription four dollars
The Western News Co of Chicago and its branches supply newsdealers·Entered at the Chicago postoffice as Second class matter

TENDENCIES IN AUTOMOBILE BUILDING

AFTER a careful study of the cars exhibited at the Olympia and Stanley shows in London, the one tendency which appears to be at all radical is that of putting the motor under the driver's seat, a plan adopted on some closed vehicles. As a matter of fact there is hardly a new thing in the English shows—that is, new to American builders—for large wheels, large tires, bevel gear drive, horizontal motors, and even motors under the driver's seat are not new here. The fact that a few cars will be fitted with the motor in any place other than under the bonnet in front will at least be a justification for the theories of one pioneer American maker, Charles E. Duryea, who has all along made claim that this is the only place for the motive power in an automobile. Duryea has stuck to the idea of large tires and at one time fitted his rigs with C springs, so that the innovations of the foreign maker of today are by no means innovations here, and if these new things abroad satisfy the popular demand it will be but an endorsement of Duryea's many pet theories for several years back.

It is evident the bevel gear drive is gradually becoming more popular both with the public and with the buyer, but the tendency of many makers to fit this form of final drive to their cars will by no means drive out the double side chain final transmission for a long time to come. There are so many things in favor of each that it is a matter of individual choice as to which is the more satisfactory for motor car construction.

The placing of motors under the driver's seat is such a radical departure for many concerns that it is a little out of what might be called the ordinary, and it will at least be interesting to hear the arguments which will be advanced for the change on the part of those makers who have altered their views on automobile construction. Some foreign makers have set aside all the arguments and have had the temerity to build other than vertical motors, one or two following out another of Duryea's ideas in constructing an oblique motor, or rather a V-shaped motor of eight cylinders, or two oblique motors made into one.

There is little tendency to build smaller powered cars, for it has been found the demand has been for more power, though not necessarily for more speed. There is a noticeable desire on the part of the foreign maker to turn out cars capable of accommodating at least four and in some instances six people within an up-to-date enclosed body of luxurious design and made with all the comforts that might be discovered in a Pullman coach. There is a reason for this desire on the part of the maker, and that is a demand for such things. And there is a reason for the demand, and that is that people who can afford to own such cars find it more comfortable to travel in such vehicles than in the ill-smelling and slow-going horse-drawn affairs, which, to accommodate an equal number of people and to afford equal comfort, must be ponderous affairs and must be hauled by not fewer than four equines and then at a pace that would by no means suit even the easy-going Englishman.

It has been the complaint abroad that motor cars of recent manufacture were, if anything, too long in wheel base to be easily handled in all sections met on a long tour and particularly where roads are narrow. As a result there has been some tendency toward shortening rather than lengthening the wheel base, whereas, in this country, the tendency has been to increase the length of the wheel bases for the 1906 trade.

There have been few really important changes as far as motor design is concerned, other than that mentioned above, and little in the matter of changes in construction, except, of course, the natural advancement in the matter of workmanship and material and the proportion of parts found necessary to be altered after several years of study on the part of makers and designers.

The visitor to the English, French and American shows of 1906 cars will not be as much impressed with the changes over this year's machines as he was with those of this year over those of last. It is but natural that the changes in design and construction should come by degrees now, whereas heretofore the alterations came with a rush. There will, however, be a marked improvement in bodies, for the comfort and convenience of the motor car user are now being given the attention that has heretofore been lacking on the manufacturers' part.

The maker and the user believe today that the motor car is pretty near a state of perfection. As a matter of fact the next decade will see so many changes that the present day car will be quite as crude, compared with the car of 1915, as the 1895 car is today. The makers are endeavoring to outdo one another in the matter of constructing fine cars. This is brought about chiefly because of the intense competition that is beginning to assert itself, but it is a fact that more than one maker is endeavoring to reach the top rung of the ladder of motor car construction and to be looked up to as a model for comparison.

CHEAP CAR NOT A DISTURBING ELEMENT

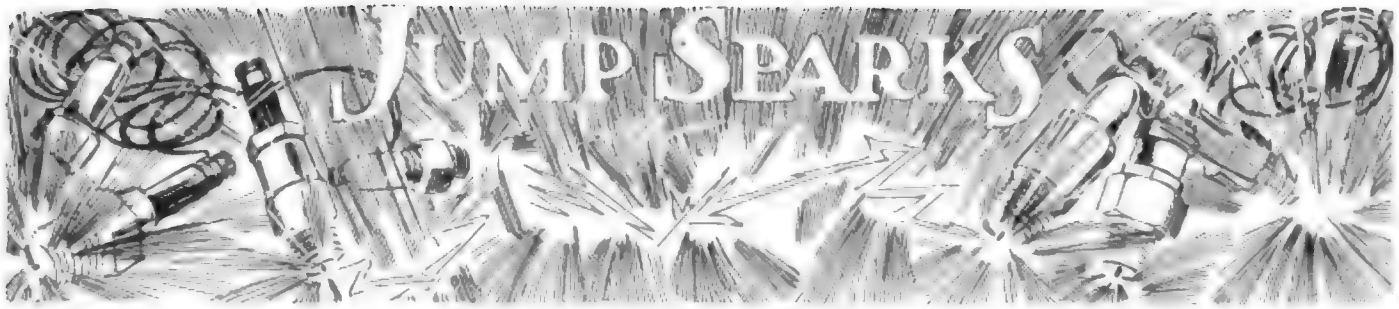
THE announcement that the Ford Motor Co. would produce a four-cylinder 15-horsepower car at a price under the half-thousand mark has not disturbed either the retail automobile merchant or other makers. When the announcement was first made it created almost endless talk and with some of the dealers handling low-priced cars there was more or less consternation. That was before the matter had been thoroughly considered in all its lights and side lights. So far as MOTOR AGE has been able to determine the marketing of this car can have no particular effect on the automobile trade unless it is of a beneficial nature. The competing manufacturers might have been expected to say unpleasant things of the company responsible for this low-priced car, but such is not the case to any great extent. As a matter of fact some of the manufacturers, even of low-priced runabouts, seem content in believing that this act will bring into the market the prospective buyer who has waited 4 or 5 years for the price of automobiles to come down.

Many manufacturers of the higher priced cars seem to consider the Ford company's movement to be a means of feeding the market; that it will make purchasers who will sooner or later desire larger powered and more expensive cars to meet what they believe to be their requirements.

The quality of the car cannot be estimated at this time, inasmuch as the first sample has been dismantled and until the automobile show takes place in New York the public will not feast its eyes upon this production. The maker of the car is certainly a well-known concern and has a reputation it can by no means afford to lose. If it proposes to maintain that reputation the car must be well worth the price asked for it, and it is not reasonable to suppose that any corporation which has had the experience of the Ford company would deliberately wreck its reputation by producing an article that would not bear criticism and stand up under the work it is proposed to give it.

It is too early to form an opinion as to what the effect of the introduction of such a car will be upon either the manufacturing or retail end of the business. That opinion can only be formed after the car has been placed in commission and has shown what it will stand. If the maker puts out a car that will sustain the maker's reputation, the possible effect will be a lowering of prices, particularly as far as runabouts are concerned. On the other hand it may be argued that a car of this grade and price will be the means of producing so many automobilists that there will be little chance to even supply the demand for all grades of machines.

Digitized by Google



Two miles a minute sounds faster than a mile in 30 seconds, anyway.

That "D—n it, do something" advice did do something—it gave Chairman Bob Morrell a dinner.

According to Olympia show reports, bonnets are no longer being advocated by our best automobile milliners.

England's Tourist trophy race has been run and won, and now it is announced that so far the trophy exists only on paper. Fawncy that, now!

Clemens and Merz nearly froze smashing long distance records. Now they know how Peary must feel trying to locate the north pole in an automobile.

Indians running a motor car bus line is the latest. Turn about is fair play—let the white man break loose from the reservation and give us a modern stage holdup.

No trouble is anticipated from the rival shows in New York, but just the same it will be necessary to call out the militia before the A. C. A. exhibition can open its doors.

When New York had to resort to an armory to accommodate automobile exhibitors, Chicago thought it wise to keep up with Gotham and also secured an armory to help out.

Going on the reports of factory improvements and new garages being built, the architects and real estate Jack Horners are pulling some mighty big plums out of the motoring pie.

It is pleasing to some Americans to note that the English makers have, for the coming season, adopted designs long ago discarded by Americans. If they were good, why didn't the Americans stick to them?

The English Daimler concern lays its profit making success to the fact that it has not dabbled in the racing game. But it forgot to mention that the German Daimler concern, and the Fiat, which is the Italian Mercedes, dabbled enough to give the English concern, a whole lot of free advertising.

Senator Morgan objects to cash prizes at Ormond. It is indeed to laugh.

Modern motor car designs are about as changeable as women's fashions.

Show spaces are as hard to get as tickets to the Thanksgiving day football games, only that in the case of the automobile maker there is no scalping being done.

Lancia is coming to prove his title to the speed throne. It wouldn't take many more affidavits like the Bennett and Vanderbilt to convince even the most skeptical.

Another attempt on the Chicago-New York record has petered out. But just think of all the dollar-a-line stuff the promoters of the affair got out of the dailies.

John D. Rockefeller is bemoaning his luck in not getting next to the fact sooner that he could eat cheese without injury to his stomach. His next cause for regret will be that he did not get wise to the joys of motoring in time to be numbered among the pioneers.

THE WEEK IN BRIEF

Henry Fournier secures control of Itala car, made famous by Florio cup race, and will put it in all big competitions; will place agency in New York.

More records broken by National car, Clemens and Merz smashing Vaughn's marks from 650 to 1,000 miles as well as 24-hour record.

Armored military car, with conning tower and rapid-fire gun, made by Daimlers, given satisfactory test in Germany.

Trouble experienced in Cleveland over show, dealers' association being tied up by outsider holding option on armory.

Balance sheet of English Daimlers shows net profit of $415,000 for year, figured to be gross profit of $1,000 to the car.

English shows open, Olympia at Olympia hall and Stanley at Agricultural hall; French makers well represented.

Lancia announced as positive competitor in Ormond meet; Clifford Earp coming over in place of Macdonald.

Coliseum show in Chicago so big Manager Miles is forced to secure First Regiment armory as annex.

Attempt on Chicago-New York record by Bertrand abandoned at Cleveland because of bad roads.

Space allotments for A. C. A. show in New York and national at Chicago announced.

Rival trade associations in Philadelphia consolidate and will hold show.

Megargel on way to Los Angeles, Cal.

We have new marks for 1,000 miles and for 24 hours and they're National records, too.

From all the ante-Ormond talk going on, 1906 can go down in history as the two-mile-a-minute year.

Megargel did not go to San Francisco from Portland under his own power—he cut across lots by taking a steamer.

We've had hill-climbs galore. Why not put on one of those coasting matches so popular in cycling days? Senator, where art thou?

If the steamship companies allowed the motorists to go on the docks with their tanks full, could the latter be arrested on a drunk and disorderly warrant?

The supper shows of the motoring calendar for 1905 come on Thanksgiving day. Those hill climbs will be admirable chasers for the real doings right after the holidays.

Probably the band will be instructed to play "Mistress Mary, quite contrary, how's your garden show?" on the opening night of the Selden affair in New York next January.

The only solution of the show space question is to hold open air exhibitions in 10-acre tracts during the summer time. Perhaps by this means exhibitors would have all the space they ask for.

President Farson proposes to furnish each member of the Chicago Automobile Club with a card which shall absolve him of going to the station when pinched for a violation of the speed ordinance. Why not go this one better and sell tickets good for ten arrests for $10, say?

While the automobilists of Chicago are being held down to a speed limit of from 10 to 12 miles an hour under penalty of arrest for reckless driving, the street cars and horse-drawn vehicles of the windy city keep up their death harvest, not fewer than three deaths having resulted from these sources last Saturday. It is evident that Mayor Dunne is not as antagonistic toward the street car corporations as one might suppose.

Digitized by Google

TRADE MELON IS CUT

English Daimler's Balance Sheet Shows Net Profit for 1905 of $415,000 on Some 500 Cars

London, Nov. 11—The publication of the Daimler company's balance sheet has caused something akin to a mild sensation in motoring circles this week. It was known that the company had had a good year, but how good came as a regular eye-opener to most people in and out of the motor trade. The company was among the first motor floations in this country. It was the bantling of H. J. Lawson, who is now an involuntary guest of His Majesty, King Edward VII, and was floated in 1896 with a capital of £500,000, to manufacture cars under the patents owned by Gottleib Daimler. Lawson took $200,000 in cold coin for those rights, and nobody has yet managed to prove that they were worth 200,000 cents. The public put down its cash, however, and from that day until this no return has ever been got from the investment. It is, perhaps, interesting to note that Henry Sturmey was one of the original directors.

The concern lived a sort of moribund existence, making no cars for some time, and then Lawson and his lot were shot out. But money was wanted and no money could be had. Change followed change until Sir Edward G. Jenkinson managed to enlist the services of Percy Martin as works manager a few years back. He came from your side of the Atlantic and deserves no little credit for the success the firm has achieved. Under his management the designs were simplified, standardized and reduced to a couple of types—and good ones at that. The drift was stopped and the ship began to pick up leeway. The king bought a Daimler and the trade wind freshened until 2 years ago it was felt possible to financially reconstruct the company with some hopes of reclamation. It was fairly well engineered and at the end of a year the first profit earned was disclosed something less than $40,000 on a capital of $5,000,000.

That was put aside and more working capital secured by preference shown special concerns and as a result a gross profit of $545,000 and a net profit of $415,000 were earned. This is a most remarkable result, for it is doubtful if the output of the Daimler factory for the trading year it covers could exceed 500 cars, so that the gross profit per car must have been close to $1,000—pretty fair in a year which the directors consider was one of great competition. For next year more capital is being called up, despite a created reserve of $150,000; the factory capacity is being quadrupled—$125,000 of fresh buildings and plant having been acquired—and the prices are to be cut about 15 per cent. The directors at their meeting yesterday were most emphatic in asserting that their figures were in no small measure due to abstention from the costly racing game which others had pursued in the belief that it was necessary to do so in order to prove that their cars were high grade. But many think Percy Martin's commercial talent is entitled to much more credit for the success than the directors' policy.

The Daimler profits following so closely on the figures disclosed by the Scottish Argyll concern are regarded as likely to lead to a promotion and floation boom. The peculiarity about these successful concerns is that the Daimler has made its money on selling high-powered, comparatively high-priced cars, while the Argyll profits have been earned out of moderate-priced, medium-powered cars.

BERTRAND TRIAL ABANDONED

Chicago, Nov. 18—If Bert Holcomb's record of 58 hours 35 minutes between Chicago and New York is beaten, another attempt will have to be made, for the Clement-Bayard trial for the coveted blue ribbon mark had to be abandoned the first day of the drive. With Clovis Bertrand at the wheel and with A. G. Schmidt as a sort of aide-de-camp, the French car started out from Chicago early yesterday morning, but got no further than Ohio, where the trip was chucked for the time being because of the miserable condition of the roads. Bertrand and Schmidt got as far as Dover, O., when they became convinced that they had chosen the wrong time for their trip. About half the time they were running on two wheels and the other half they were picking themselves out of the ditches into which they skidded with aggravating regularity. Then, too, the mud continually spattered up on their goggles, effectually blinding them. Therefore, all things considered, the pair decided to quit, traveling into Cleveland in a trolley car and leaving the car in a handy shed near Dover.

LANCIA TO BE AT ORMOND

New York, Nov. 23—Special telegram—Lancia will be at the Florida meet and also compete in Cuba. Negotiations to this end have been concluded by the Hollander & Tangeman and Lancia will come on with George R. Tangeman on his return from his trip to Paris and Turin. Lancia is to have at his disposal both of the Fiats which were piloted by Nazaro and Cedrino in the Vanderbilt race.

According to advices from England received by Morgan, Clifford Earp is to drive a six-cylinder Napier at Ormond in place of Arthur Macdonald, who will be unable to make the trip this year.

Carl Fisher is to pilot a six-cylinder National. It is reported here that George Robertson, who piloted the Christie in the Vanderbilt race, has been engaged to drive the Premier, which failed of completion in time in the elimination trials.

QUAKER TRADESMEN UNITE

Philadelphia, Pa., Oct. 20—The Philadelphia Automobile Trade Association and the Philadelphia Automobile Association were to-night amalgamated under the name of the former. The new organization includes nearly every dealer in automobiles and accessories in the city. New officers will be elected at the next meeting, December 2. Dealers in accessories will be admitted as associate members. It is also intended in the near future to admit owners to associate membership. It was definitely decided to hold the next show in the Export Exposition building.

TURNS A SHOW TRICK

T. C. Whitcomb Secures an Option on Gray's Armory in Cleveland and Ties up His Rivals

Cleveland, O., Nov. 21—Cleveland's local automobile show has been scheduled for the week of February 19, but as to who will hold it and the character of the exhibits, are at present matters of some conjecture in the minds of some people. The Cleveland Automobile Dealers' Association secured the sanction from the national association and has its plans perfected for holding the show the week mentioned at Central Armory. Now comes one T. C. Whitcomb, a local dealer, who claims he holds an option on the big armory for that week, and who says the association will not hold the show, except on his terms and that if they do not accept his terms he will hold an independent show of his own. Thereby hangs an amusing and somewhat lengthy tale.

During the past 2 years the local shows have been held at Gray's armory, under the auspices of the Cleveland club and the dealers' association. Last year Mr. Whitcomb conducted an opposition show in a neighboring large building. He claimed that he was never invited to participate in the big show; then when he heard of the plans he tried to get in, but that his application for space was turned down. So he held his independent show. The association officials claim this was done for effect and that Whitcomb was invited on the same terms as other dealers.

As he related it to a MOTOR AGE man the other night, Mr. Whitcomb says that he determined, after the show last year, that he would get the independent makers and dealers together and hold a big show this winter. He claims that he went to Major McQuig, who was in charge of the Central armory, and, in the presence of witnesses, obtained a verbal option for the use of the armory for the "same week that the association was to hold its show." He also claims he gave a check for a deposit, which, he says, has since been returned to him as paid. This, he believes, constitutes a legal option. The association would have selected Gray's armory, as usual, but for the fact that it was not available. It applied for the use of the Central armory and secured a written option for the week it specified; it appears, however, that it dealt with another man from the one with whom Mr. Whitcomb had dealings.

But despite their written option, the association officials appear to be somewhat dubious over Whitcomb's claims. W. L. Colt, chairman of the association show, made overtures for a peaceful settlement. He proposed that Whitcomb come into the association on the same basis as the other members, paying $90 for a share of stock, thereby participating in the profits of the show. Whitcomb claims the majority of the other dealers only paid $10 a share for their stock and says, as a matter of fact, he does not want to join anyway. He offered to join hands with them without joining the association, providing he was given a share in the profits in return for his option. He also wanted the choice of

Digitized by Google

spaces. Thus far the parties have failed to get together. Whitcomb says he will go in only on the terms mentioned and the association members decline to consider the proposition. Whitcomb says he will enjoin them from using the armory, and says he is satisfied he can get up a good show among the independent manufacturers are members of the organization, and ise of support from a number of manufacturers if he goes into it. The association claims that fourteen prominent dealers are members of the organization, and that without these, and the goods they represent, a show would be a mere farce.

NEW TOURIST TROPHY RULES

London, Nov. 11—The draft of the rules for the Tourist trophy race of 1906 has just been published. It is stated by those who generally guess fairly correctly on matters before the automobile club councils that the race will be run off in the Isle of Man on May 3 next. Minimum weight of chassis is still fixed at 1,300 pounds, but no maximum is laid down. The main endeavor in the new regulations seem to have been directed toward reducing the possible pace to be obtained, for not only is the fuel allowance reduced to a 25-mile per gallon limit for gasoline cars, but the number of change speed gears is limited to four, save where an expanding type is used, and each car entered will be required to drive on the level at a pace of 12 miles per hour or slower, without slipping the clutch, in order that the top gear may not be made a mere racing ratio for dropping down the mountain sides.

Another new regulation is that no exhaust release must be fitted to the muffler. The load to be carried by each car has been raised to 1,100 pounds, as against 950 pounds in September last, and in order that, as far as possible, standard bodies should be fitted, the backs of which shall have a minimum height from the ground of 49 inches.

The actual trophy, which is not yet in existence, is to take the form of a reproduction of the statue of Hermes in the South Kensington museum.

FIGURES FRANCE'S CAPACITY

London, Nov. 11—Apropos of the calculations of Georges Prade and the output of the French motor factories, Paul Sentier has been investigating the product of French factories that are exported in chassis form to appear under British and other alien names. He estimates that France has twenty large factories of this class, averaging two chassis per day, equal to 1,200 monthly; fifty more, capable of producing one chassis per day, or 750 chassis per month, and so, in all, he computes that France produces 25,000 chassis per year, of which France absorbs 8,000, leaving 17,000 for export.

Of this he believes that 7,000 or 8,000 come to England, as every French factory of this type has been working at full pressure during the past year and many have all their possible output contracted for up to the end of 1906. One critic has endeavored to analyze Sentier's figures in conjunction with the board of trade figures, and they don't convince him that the Frenchman, Sentier is right.

SHOW NOW SEEMS A GO

Brilliant Plans for 1907 for Big Exhibition in France are Revived By Parisians

Paris, Nov. 9—For nearly 12 months efforts have been made by French sportsmen to organize a great sports exhibition in Paris, but the movement has met with so little success that one is inclined to doubt the old saw that "where there's a will there's a way." The government said that a great international exhibition of everything connected with sports, but more especially of automobilism, should be held in 1907, and ordered a parliamentary commission to draw up a scheme. It was apparently not a difficult matter, for a paper plan was soon put before the public, and charmed all by its vastness and completeness.

The big plot of land, near the center of the city, bordered by the river Seine, and having on it the greatest landmark of Paris, the Eiffel tower, was fixed upon as the exhibition ground. The base of the tower would form a unique main entrance, large exhibition buildings would be built, the great Machinery hall left over from the 1900 world's fair, and one of the largest buildings in the world, would be available, and right around the exhibition ground would be constructed a track for automobiles, cycles and horse races. A harbor was also to be built on the Seine within the grounds, for the convenience of motor boats.

But the brilliant plan no sooner came to light than it had to be withdrawn, for the Paris municipal council, to which the Champ de Mars belongs, refused to give it up, even on a government request. Great efforts were made to move the stubborn body of city rulers, but neither persuasion nor threats, nor ministerial influence could move the city council in its decision. Other spots just outside the city boundaries were proposed, but only met with half-hearted support, owing to their distance from the center. Lately there appears to have been a softening among the obdurate councillors and the Champ de Mars scheme is again being brought forward. The organizing committee has just held a meeting and decided unanimously that an exhibition shall be held in 1907; that it shall be held in the center of Paris, and that the Champ de Mars shall be the ground. The latest scheme put forward is one with an estimated expenditure of $4,000,000 and $6,000,000 income. It provides for the erection of two large halls, which will remain permanently for various exhibitions, the utilization of the great Machinery hall for the automobile exhibit, and a central portion reserved for three tracks, one being for automobile races, another for foot races, and the third for Olympic games.

The Automobile Club of France has got hold of a really good idea in its town vehicles' competition, to be held on December 21, during the automobile salon. It is in reality a touring contest through the city of Paris. The thirty odd competitors will be started off at the doors of the Grand Palais and will run 62½ miles over the streets and boulevards of the capital, passing the starting point twice during the run and finishing at the same depot. The award is based on regularity of running, consumption, elegance, simplicity of construction, and suitability for town work. Every stop for any cause whatever, apart from tire troubles, will be penalized, and in order that controlling may be more reliably done it is proposed to ask the prefect of police to allow a cyclist policeman, having a chauffeur's driving certificate, to accompany each car. Both gasoline and electric automobiles are entered for the competition and the same rules will apply to both classes of vehicles.

CHANGING FRENCH LAWS

Paris, Nov. 8—Whilst waiting for the important and busy season of the annual shows, French automobilists have but the question of changes in the existing laws to occupy their attention. It is certain that shortly modifications of the existing regulations will be published, for the assurance to this effect was given yesterday in the senate by the minister of the interior. Senator Gormot has placed himself at the head of the reform movement in France and has not thereby made himself beloved of automobilists. The senator asks that the present law limiting the speed of automobiles to 12½ miles in towns and 19¾ miles in the open country should be enforced, and in his reply the minister of the interior gave an assurance that this would be done.

"We cannot put it below 12½ miles an hour," said the minister, "for many horses reach that speed." He did not say anything about enforcing the present 19¾ miles limit for the open country, for it is admitted by even opponents of automobilists that such a restriction is nothing short of ridiculous. Short-sighted, drunken and law-breaking individuals will soon not be allowed to drive automobiles in France, and when a driving certificate has been withdrawn in one department it will not be possible to skip across to the next legislative district and obtain a fresh one. Youthful prodigies will not be encouraged, for until the age of 18 years no person will be allowed to drive a 35-horsepower automobile. From 21 years of age the chauffeur may drive a car of any power whatever, provided he has first of all gone through an apprenticeship with moderate-sized vehicles. Manufacturers of sirens will be sorry to hear that this device is in great danger of being abolished. A parliamentary commission which has been studying the question has declared in favor of the suppression of the horn also, at least for town work, substituting a bell for it, but giving chauffeurs a liberty of choice when in the open country. Registration numbers under the new French regulations will have to be painted on the car itself and not consist of a movable tag.

HILL CLIMB OFF

New York, Nov. 20—Owing to the late date, the lack of urgent demand by the trade, the poor condition of the hill, and W. J. Morgan's numerous other engagements, the senator has decided to abandon his project of promoting a hill climb on Eagle Rock on Thanksgiving day, leaving the east without a holiday event.

Digitized by Google

TAG END OF LONG TRIP

Megargel and Fassett Almost Starve in Barlow Pass—Take 4 Days To Go Last 100 Miles

Palo Alto, Cal., Nov. 23—Special telegram—The Reo Mountaineer party reached here last night. It will be in Los Angeles about Saturday. We went from Portland, Ore., to San Francisco, leaving the latter city Monday morning for Los Angeles on our way home.

Speaking about strenuous automobiling, I think Fassett and I had 4 days of about as active mountain motoring as any man has yet tasted just before reaching Portland. Fassett said not for $500 would he undertake another trip across the Cascades at this season of the year, and Fasset is a pretty game boy, too. The Reo Mountaineer pulled out of Wapinitia early on a Monday morning for the 100-mile run to Portland. The Reo Mountaineer can go 35 miles an hour and has done so, but she didn't on this trip, nor could any other automobile. We carried grub enough for four meals and as we spent Monday, Tuesday and Wednesday without coming to a human habitation, it is needless to say on two of those days we went without food.

The road from Wapinitia to the edge of the timber, kept in good order by the numerous teams carting in the winter's supply of kindling wood, was excellent sailing and our car bowled along mertily until we ran into the timber. Even then for the first 10 miles it was not so bad and we did not have to get out but twice to build up over stumps or rocks. Then we came to the first fording of Salmon river.

It took a couple of hours to do it and it was dark when we stopped at the top of the embankment, but we had forded our first stream. We had been informed that we had this same river to ford five times and that it was worse fording at every ford we came to. We found this true.

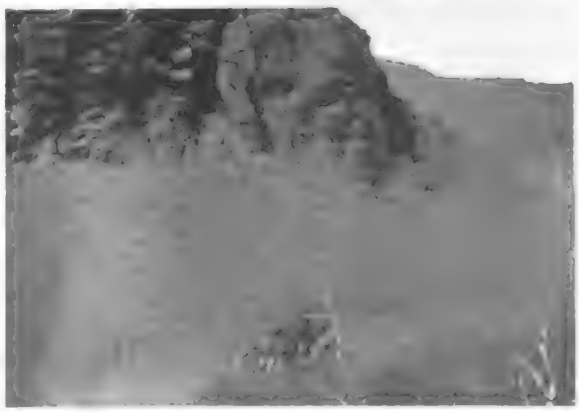
While Fasset was draining the water out of the carbureters and incidentally taking out our wet supplies from the tonneau, the water having come almost to the top of the tonneau, I busied myself constructing a hut of logs and boughs, such as I was wont to build in the woods around Scranton, Pa., in my boyhood days.

Our supply of firewood gave out about 2 a. m., and the snarls and growls that we had heard at a distance early in the evening were heard closer and closer until I sat up and fired my Winchester several times in their direction, then, taking advantage of the confusion, jumped out and got more wood for the fire, expecting every minute to feel a cougar or bobcat come down from the trees above and land on my back or shoulders, for, according to the old inhabitant, that's the way they do. Nothing of interest happened after that except we cooked and ate the remainder of our food for breakfast at daylight.

We were just about to build a camp for Wednesday night when we saw a sight that almost brought tears to our eyes. It was smoke arising from the treetops half a mile further. Whether Indians or white men we didn't much care, for we were commencing to know what real hunger was. It proved to be the United States government camp on Mount Hood and we were made heartily welcome by Father Yonkum and his wife, who live on the mountain top the year around.

At first we had a hard time to make them believe that we had actually automobiled over the Barlow pass and over Mount Hood, considered impassable for even teams in November, but I guess the manner in which Fassett and I stowed away grub that night fully convinced them that we had been doing something out of the ordinary, while the Reo Mountaineer, with muffler gone, tire chains on the rear wheels and covered from end to end with the sticky, yellow clay that lay underneath the soft snow on the mountain road, was a mute witness to the struggle we had gone through together during the past 4 days.

The run from the top of Mount Hood down to Portland, a distance of 60 miles, was easily made the next day and our reception in Portland was well worth the troubles we had gone through on our long trip.—PERCY F. MEGARGEL.



TEAMING IN THE MOUNTAINS MEGARGEL IN WESTERN WILDS

JAUNT A FRUITFUL ONE

Senator Morgan, Back from Florida, Talks of Promising Outlook for Winter Show and Meet

New York, Nov. 18—Senator Morgan got back from his flying trip to Florida today, filled with enthusiasm over the prospects of the southern circuit. His first stop was at Jacksonville, where he arranged to undertake the management of the automobile show to be held there January 4-18, in connection with the food show exposition. An exhibition building covering an entire block diagonally opposite the Windsor hotel, is to be erected, a section of which is to be devoted to the display of motor cars.

"There are now ninety-five automobiles in use in the Florida metropolis," said the senator. "To the best of my recollection the cars represented by agencies are the Rambler, Maxwell, Ford, Olds, Northern, Mitchell, Cadillac, Winton and White. Of these, the Rambler, Olds, Mitchell and Northern have already taken space. So has the Napier. With the new roads contemplated in Florida there is a big chance now for makers to get a foothold there. There will be visitors to the show from Atlanta, Savannah and all the Florida cities and the show will be visited by winter travelers en route to the east and west coast resorts."

From Jacksonville Morgan went to the course and spent 2 days at Daytona and 1 at Ormond. He found the utmost harmony prevailing between the rival towns and all hands enthusiastic over the fine card laid out for the meet. The senator found the beach in splendid shape. There had been a storm 3 weeks ago, which cut away the beach clear to the bluff and added fully 30 yards to the width of the course. He says there was not a sign of red sand on the whole 15-mile stretch on the beach.

Ira Paine, of Minneapolis, the new president of the Florida East Coast Automobile Association, has already taken possession of his cottage at Daytona, and E. M. Steck, the club's former president, has taken down the "To Let" sign and will again occupy his Daytona winter residence.

Morgan's mail indicates great interest here and abroad in the coming tournament. The Hughes Automobile Co., of Cincinnati, writes for particulars about the heavyweight steam and touring car events. He had also a communication confirming the intention of the Darracq people to send over a great flyer to make a bid for the 2-miles-a-minute speed crown, and the other important events of the meet.

Floridians, by the way, have taken to the 2-miles-a-minute race idea with enthu-

Digitized by Google

siasm. The Jacksonville metropolis is to start a voting contest to pick the prettiest girl in Florida, to whom shall be given the honor of placing the golden wreath on the brow of the victor. One penny per vote is to be devoted to the purchase of the crown, which is guaranteed to cost not less than $350, and is now being designed by a jeweler in this city.

It is now announced that Renault Brothers are building a special car in France for the 2-miles-a-minute race, of much higher power than that piloted by Sisz in the Vanderbilt race, which Maurice Bernin is to drive in that and other races in Florida and Havana. There are stories afloat that W. K. Vanderbilt, Jr., has been trying out the Hemery Darracq, which was not sent back to France. The inference is that he still has Florida beach speed aspirations buzzing under his bonnet.

While in Florida the senator had a conference with the Palm Beach powers that be, which resulted in the determination to again run a motor boat carnival in Lake Worth. It will last 3 days and is scheduled to begin on the Tuesday following the close of the beach races. It is probable that there will also be 1 or 2 days of motor boat racing at Miami, the senator says.

All idea of a motor car race between Palm Beach and Miami over the new road, which will be completed on January 1, has been abandoned by the promoter.

E. J. Conill has leased the Clement-Bayard car, in which Albert Clement finished a close second to George Heath in last year's Vanderbilt race, to represent him in the Cuban carnival and Havana cup races. Senator Morgan plans to have the 200-mile race for the Havana cup take place on Sunday, February 11, and wind up the Cuban carnival week, instead of beginning it. This will get contestants and visitors home a week earlier than originally planned. The idea is to have the floral parade on Sunday, February 4; the 2-day tour of the island on Monday, Tuesday and Wednesday; gymkhana contests on the Prado and Malecon on Thursday, and sprint racing on the course on Friday, winding up the meet.

The Itala car, which won the last Brescia race, covering the 311 miles in 4 hours 46 minutes 47⅘ seconds, an average around 64 miles an hour, is to be a competitor at the Ormond-Daytona meet. Signor Maurice Fabri, who is here seeking to establish an American agency, and was a competitor in the Brescia contest, says he will bring the car back with him on his return from the Paris show and drive it in Florida. The cable, by the way, brings the news that Henry Fournier will again be at the wheel in road contests. He has taken on the Societe Paris Automobile, the Itala agency, and will establish branches for that company in Berlin, Rome, London, Nice, Cannes and New York, and have his representatives exploit the car through competition.

NEW MARKS ARE MADE

National Car, Driven by Clemens and Merz, Smashes Vaughn's Long Distance Records

Indianapolis, Ind., Nov. 18—One more record or rather a series of records was added to the National collection at the completion of an attack on the 24-hour mark which was completed at 2:45 o'clock yesterday afternoon. Week before last—on November 4—Jap Clemens smashed the world's 100-mile mark, doing the distance in 1 hour 53 minutes 21⅘ seconds. The latest National performance, in which Charles Merz and Jap Clemens participated, was the breaking of the figures put up by Guy Vaughn on the Empire City track last June for 1,000 miles and for 24 hours. The 1,000-mile time was 21 hours 58 minutes 4⅖ seconds as against Vaughn's 23 hours 33 minutes 20 seconds and, farther back, Wridgeway's 25 hours 50 minutes 1 second. For the journey twice around the clock the National did 1,094½ miles as against the Decauville's 1,015⅝ miles and the Peerless' 943 miles, beating the long grind mark by more than 79 miles. The National first got inside the records at 150 miles, when it was 13 minutes 5⅗ seconds to the good. Then there was a slump and Father Time got away until the 650th mile was reached.

CLEMENS AND MERZ IN THE NATIONAL AFTER RECORD RIDE

For the 24 hours an average pace of 45 7-12 miles an hour, including stops, was maintained. In all 2 hours 54 minutes 12 seconds were taken out this way, while Vaughn only stopped 1 hour 44 minutes 4 seconds in his record drive.

Originally two National cars started in the attack on Father Time, but an accident at the 151st mile to the car Clemens was driving put that machine out of business, so the two drivers then alternated the rest of the way in the one car. At times Merz and Clemens were so numbed by the weather that it was necessary to almost carry them from the car to the judges' stand, where a warm stove, sandwiches and coffee awaited them. Sometimes the two men had to be rolled on the floor before they could get control of the muscles of their legs.

This record drive was started at 2:45 p. m. on Thursday afternoon, November 16. The track at the beginning was in very fair condition. The two National cars were started 30 seconds apart, and ran evenly until the first tire troubles, which occurred within the first 100 miles. The first mile was run in 1 minute 9 and ⅖ seconds. From the first mile until the fifty-eighth there was slight variation in the time, the different miles varying from 1 minute 7⅗ seconds to 1 minute 6⅕ seconds. After this point in the race, the car driven by Clemens showed a little better speed and made miles from 1 minute and 5 seconds to 1 minute 5⅘ seconds, while a little later it dropped to 1 minute 4½ seconds, and then 1 minute 3 seconds, and finally 1 minute 2⅗ seconds on the eighty-eighth mile.

On the **ninety-fourth mile a** tire on Clemens' car exploded. At that time he was 2 minutes 19⅗ seconds inside of his former record, made in the 100-mile race. He lost 7 minutes 18 seconds, in having the tires replaced, but succeeded in breaking the 150-mile record by 13 minutes 5⅕ seconds. The second car, driven by Merz, fell slightly behind and on the 151st mile Clemens' machine struck the fence on entering the home stretch, because of the fact that it was growing dark, and the Prest-o-lite lights, which were to light the track, had not all been lit at that time of the mixup.

The withdrawal of Clemens' car left but one machine in the drive, which was the one handled by Merz at the beginning. It was then decided to alternate the drivers, allowing each to drive from 50 to 100 miles before changing. The car which struck the fence broke the 150-mile record by 13 minutes and 5⅕ seconds. Following is a table showing the new and old records:

Miles	National	Decauville
650	14:08:51 2-5	14:26:47
700	15:10:29 3-5	17:59:59
750	16:20:25 2-5	17:27:10
800	17:17:26 1-5	18:52:44
850	18:23:44 2-5	20:06:46
900	19:44:48 1-5	21:21:37
950	20:54:50 3-5	22:33:16
1000	21:58:00 4-5	25:50:01
1050	23:07:42	.....
Hours	**Miles**	**Miles**
24	1094 3-16	1015 5-8

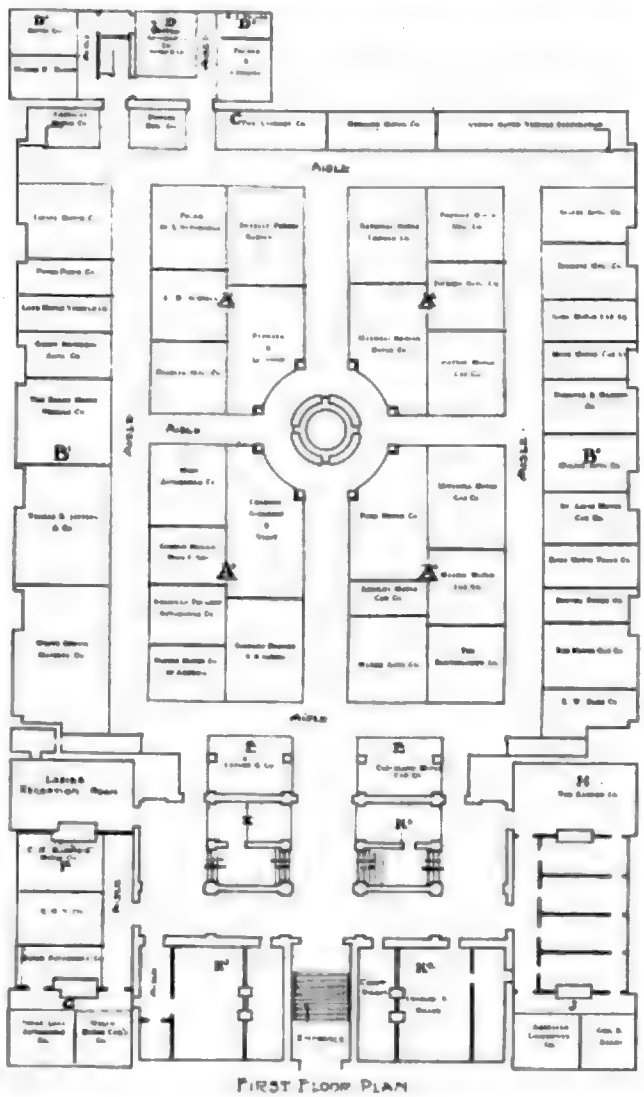
Digitized by Google

INDEPENDENTS ALLOTTED

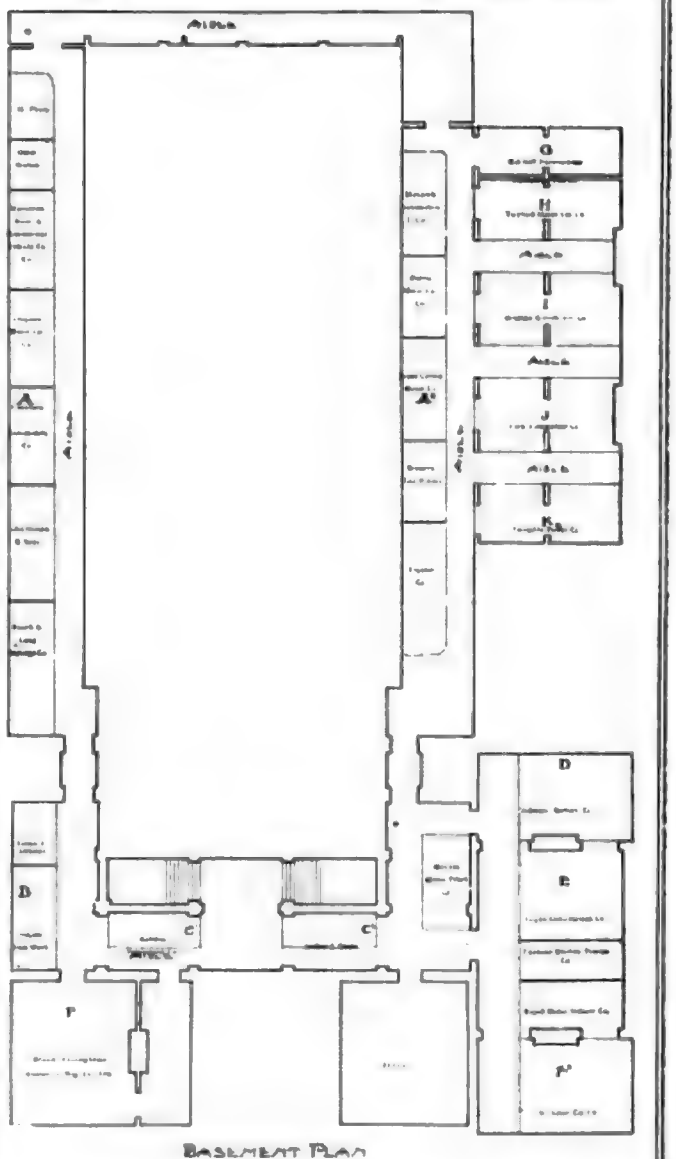
NEW YORK, Nov. 18—The show down of the independents has been made. The Automobile Club of America made announcement today of its allotments of spaces for what it aggressively terms its sixth annual show of motor cars and accessories at the new Sixty-ninth Regiment armory, January 13 to 20, 1906. Space has been given to 204 exhibitors—twenty-four in the basement, eighty-nine in the gallery, twenty-three in the gymnasium, and twenty-eight in the basement—and applications are still coming in.

With 204 exhibitors—and possibly a few more will be squeezed in before the show opens—the armory show will be such as to at least share equally with the garden affair in the patronage the automobile world will give eastern motor exhibitions in January.

Of the eighty-one exhibitors in the building there are nearly fifty American automobile makers. In this list all the prominent home concerns are found outside of those allied with the A. L. A. M., and with the amount of space allotted each, a representative exhibition may be looked for. The demand for space was such that the show management was compelled to place a number of prominent concerns in the basement, which has been laid off in such a manner as to make a rather desirable



FIRST FLOOR PLAN



BASEMENT PLAN

MAIN FLOOR

White Sewing Machine Co.
Thomas B. Jeffery & Co.
Baker Motor Vehicle Co.
Grout Bros. Automobile Co.
Lane Motor Vehicle Co.
Pungs-Finch Co.
Lozier Motor Co.
Palais De L'Automobile.
English Daimler Co.
Daimler Mfg. Co.
Renault Bros. Agency
Panhard & Levassor
Mors Automobile Co.
Gobron-Brille Agency.
American Peugeot Co.
Napier Motor Co.
Charron, Girardot & Voigt
Richard-Brasier Co.
National Motor Vehicle Co.
Maxwell-Briscoe Motor Co.
Premier Motor Mfg. Co.
Jackson Automobile Co.
Dayton Motor Car Co.
Ford Motor Co.
Ardsley Motor Car Co.
Wayne Automobile Co.
Mitchell Motor Car Co.
Marion Motor Car Co.
Bartholomew Co.
Austin Automobile Co.
Buckeye Mfg. Co.
Acme Motor Car Co.
Moon Motor Car Co.
Nordyke & Marmon Co.
Moline Automobile Co.
St. Louis Motor Car Co.
Knox Motor Truck Co.
Reo Motor Car Co.
Duryea Power Co.
E. W. Bliss Co.
Corbin Motor Corporation.
Newcomb Motor Co.
Lansden Co.
Hendee Mfg. Co.
American Motor Co.
Aster Co.
Central Automobile Co.
Blomstrom Motor Co.
E. H. V. Co.
Moore Automobile Co.
Oscar Lear Automobile Co.
Welch Motor Car Co.
Charles E. Miller
American Locomotive Co.
Rainier Co.
Cleveland Motor Car Co.

BASEMENT

Wolverine Automobile Co.
Iroquois Motor Car Co.
Crawford Automobile Co.
John Dolson & Son
Rausch & Lang Carriage Co
Julian F. Denison
Iroquois Iron Works
Westinghouse Co.
Autocar Equipment Co.
McCrea Motor Truck Co.
St. Louis Car Co.
Rapid Motor Vehicle Co.
Cantono Electric Tractor Co
Logan Construction Co.
Johnson Service Co.
Viquesel Co.
Western Tool Works
Jones-Corbin Motor Co.
Dorris Motor Car Co.
Monarch Automobile Co.
Twombly Power Co.
York Automobile Co.
Berkshire Automobile Co.
Twyford Motor Car Co.

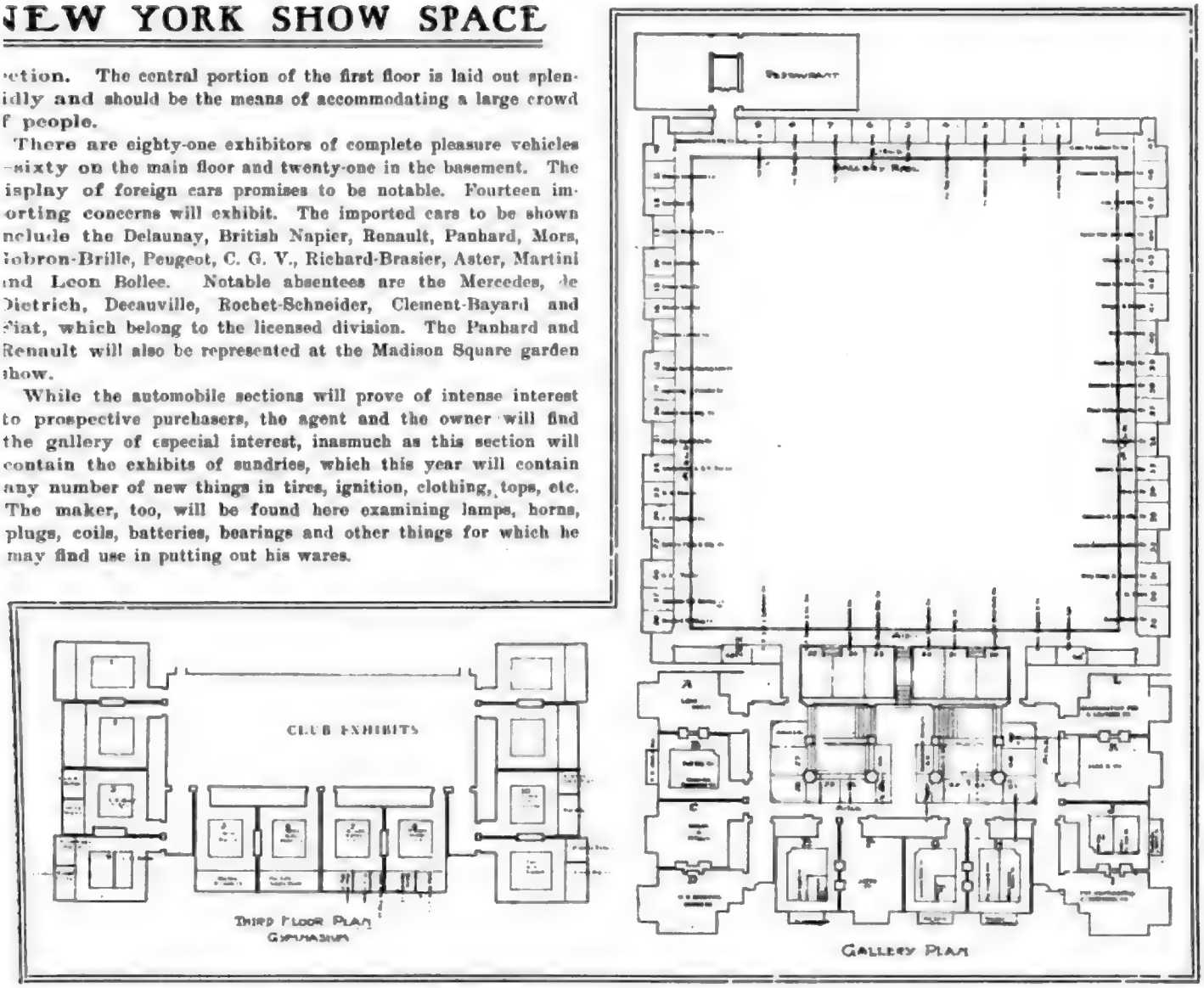
Digitized by Google

NEW YORK SHOW SPACE

ction. The central portion of the first floor is laid out splendidly and should be the means of accommodating a large crowd f people.

There are eighty-one exhibitors of complete pleasure vehicles -sixty on the main floor and twenty-one in the basement. The isplay of foreign cars promises to be notable. Fourteen importing concerns will exhibit. The imported cars to be shown nclude the Delaunay, British Napier, Renault, Panhard, Mors, Sobron-Brille, Peugeot, C. G. V., Richard-Brasier, Aster, Martini nd Leon Bollee. Notable absentees are the Mercedes, de Dietrich, Decauville, Rochet-Schneider, Clement-Bayard and Fiat, which belong to the licensed division. The Panhard and Renault will also be represented at the Madison Square garden how.

While the automobile sections will prove of intense interest to prospective purchasers, the agent and the owner will find the gallery of especial interest, inasmuch as this section will contain the exhibits of sundries, which this year will contain any number of new things in tires, ignition, clothing, tops, etc. The maker, too, will be found here examining lamps, horns, plugs, coils, batteries, bearings and other things for which he may find use in putting out his wares.



GYMNASIUM

Hatch & Brittan
Survey Map Co.
A. R. Mosler & Co.
Mason-Kipp Mfg. Co.
Consolidated Rubber Tire Co.
F. M. Brown
Mills Mfg. Co.
Sherwin-William Co.
Safety Motor Power Co.
Dac Automobile Supply House
St. John Rubber Tire Co.
Gray-Hawley Mfg. Co.
F. A. Goebel
Automobile Lock Club Co.
Uncas Specialty Co.
John Boyle & Co.
Republic Rubber Tire Co.
Carl E. L. Lipman
Judson & Downing
Kinsey Mfg. Co.
Francois Richard
Post Mfg. Co.
Anderson Spark Plug Co.

GALLERY

Hartford Rubber Works Co.
Gray & Davis
Goodyear Tire & Rubber Co.
Twentieth Century Mfg. Co.
Veeder Mfg. Co.
Rose Mfg. Co.
Diamond Rubber Co.
Badger Brass Mfg. Co.
B. F. Goodrich Co.
Diamond Chain & Mfg. Co.
Warner Instrument Co.
Steel Ball Co.
Dayton Electrical Mfg. Co.
Fisk Rubber Co.
Briscoe Mfg. Co.
Warner Gear Co.
National Carbon Co.
Timken Roller Bearing Axle Co.
Light Mfg. & Foundry Co.
Gabriel Horn Mfg. Co.
Shelby Steel Tool Co.
International A. & V. Tire Co.
R. E. Dietz & Co.
C. F. Splitdorf Co.
Baldwin Chain & Mfg. Co.
G & J Tire Co.
American Ball Bearing Co.
Standard Welding Co.
Remy Electric Co.
W. H. Brown
Wray Pump & Register Co.
Aurora Automatic Machine Co.
Edmunds & Jones Mfg. Co.
Herz & Co.
Eastern Carbon Works
Pennsylvania Rubber Co.
Hyatt Roller Bearing Co.
Hartford Suspension Co.
Whitlock Coil Pipe Co.
Webb Co.
Morgan & Wright
Brown-Lipe-Gear Co.
Whitney Mfg. Co.
Ironclad Mfg. Co.
Spicer Universal Joint Mfg. Co.
Firestone Tire & Rubber Co.
Connecticut Telephone & Electric Co.
Byrne, Kingston & Co.
Springfield Metal Body Co.
Wheeler Mfg. Co.
Parish & Bingham Co.
Hess-Bright Mfg. Co.
Sprague Umbrella Co.
S. F. Bowser & Co.
New York & New Jersey Lubricant Co.
McCord & Co.
Prest-o-Lite Co.
Oliver Mfg. Co.
R. E. Hardy Co.
Standard Roller Bearing Co.
Republic Rubber Co.
McGeham Odometer & Mfg. Co.
A. W. Harris Oil Co.
Continental Rubber Works Co.
Belding Automobile Transportation Co.
Leon Rubay
Duff Mfg. Co.
Motor Car Equipment Co.
F. W. Ofeldt & Sons
Sibley & Pitman
New York Sporting Goods Co.
Automobile Supply Co.
Manhattan Automobile School
Railway Appliance Co.
Aster Co.
Gearless Trans. Co.
Klean-Al Mfg. Co.
William Hjorth
William Cramp & Sons Co.
Edison Storage Battery Co.
Worcester Press Steel Co.
Continental Caoutchouc Co.
Hill Mfg. Co.
Cook's Railway Appliance Co.
Witherbee Igniter Co.
Saks & Co.
Scandinavian Fur & Leather Co.

Digitized by Google

MORE ROOM FOR CHICAGO SHOW

First Regiment Armory, to Be Used as Annex for Chicago Show

Chicago, Nov. 21—So great has been the demand for space at the 1906 Chicago automobile show that Manager Miles has been compelled to secure an additional exhibition hall. The nearest and only available building is the First Regiment armory, which is located at the northwest corner of Michigan avenue and Sixteenth street, and which ranks second to the Coliseum as a hall for exhibiting purposes. Securing additional space was made necessary by the fact that while the Coliseum has 39,000 square feet of exhibition space, the applications cover 64,000 feet, so there was a shortage of 25,000 feet.

The armory building is 300 feet from the Coliseum, the backs of the two buildings being on the opposite side of the same alley. It is the intention of the management to cover the alley in some manner and thoroughly light it. The alley is now provided with an asphalt pavement. The appointments in the armory will be the same as those in the Coliseum.

As a matter of fact, the management is making an effort to turn as much of the public into the armory first as is possible. The passes for automobile agents for both buildings will be issued at the armory only and the railroad tickets will be signed there. It is designed to hold all meetings and conventions in the armory in order to force the attendance into this part of the automobile show.

In the allotment of space the management based the placings according to the number of previous shows at which applicants had exhibited, dividing them into classes. Although Manager Miles stated that an effort was made to provide each applicant with the amount of space desired, even with the addition of the armory it was impossible to do so, and some must be left out. It will be noticed by the accompanying list that in the armory there are many of the most prominent automobile makers in the country, so that even without the efforts of the management to force the attendance of the public into this portion of the show the armory will receive quite as much attention as will the Coliseum proper when the show opens.

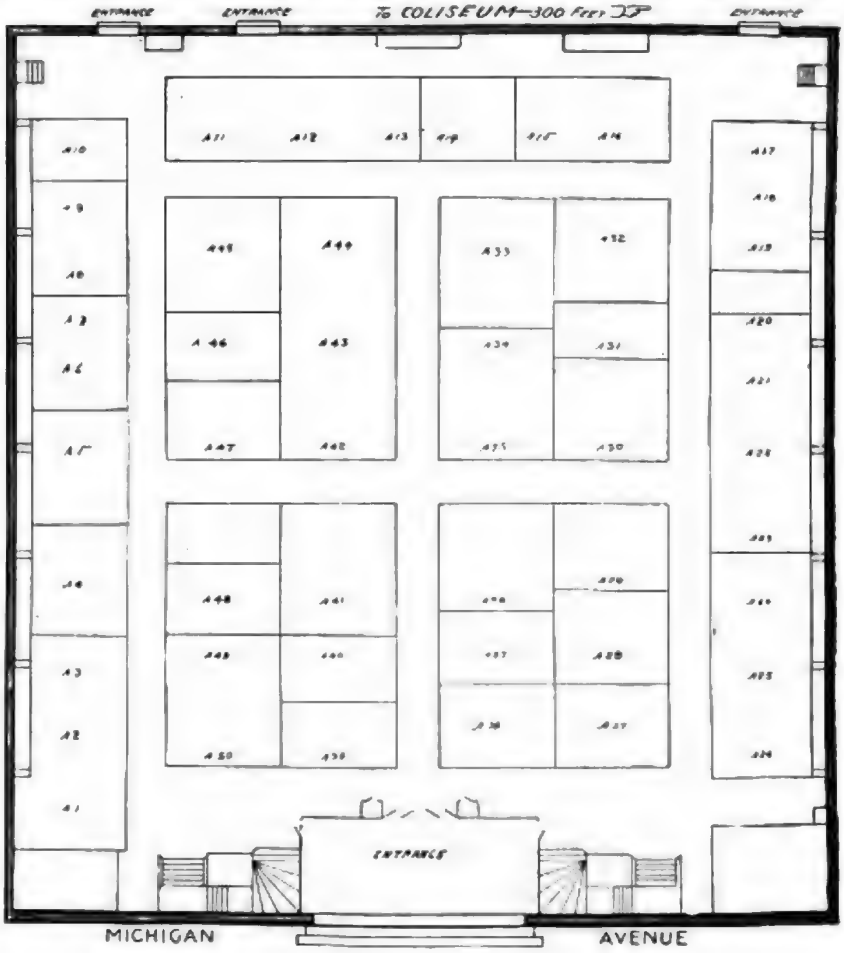
The management has made public the list of exhibitors on the main floors of the coliseum and armory, but the work of apportioning space for the galleries has been such that these allotments will not be announced for a week. The exhibitors:

THE COLISEUM

Packard Motor Car Co.
Kimore Mfg. Co.
E. R. Thomas Motor Co.
Olds Motor Works.
Haynes Automobile Co.
Locomobile Co.
National Motor Veh. Co.
Electric Vehicle Co.
Pope Motor Car Co.
Woods Motor Veh. Co.
Winton Motor Car. Co.
Pope Mfg. Co.
Mitchell Motor Car Co.
Thomas B. Jeffery & Co.
Peerless Motor Car Co.
Knox Automobile Co.
F. B. Stearns Co.
Studebaker Automobile Co.
Stevens Arms Co.
Autocar Co.
George N. Pierce Co.
White Sewing Mach. Co.
St. Louis Motor Car Co.
Apperson Automobile Co.
Royal Motor Car Co.
H. H. Franklin Mfg. Co.
Northern Mfg. Co.
Cadillac Automobile Co.
Ford Motor Co.
Premier Motor Mfg. Co.
Reliance Automobile Co.
Baker Motor Carriage Co.
Wayne Automobile Co.
Duryea Power Co.
Buick Motor Co.
Waltham Mfg. Co.
Corbin Motor Veh. Corp.
Vehicle Equipment Co.
Chicago Automobile Co.
Bartholomew Co.
Tincher Automobile Co.
Auburn Automobile Co.
Jackson Automobile Co.
Austin Automobile Co.
Pungs-Finch Co.
Darton Motor Vehicle Co.
Model Gas Engine Co.
Pierce Engine Co.
Holsman Automobile Co.

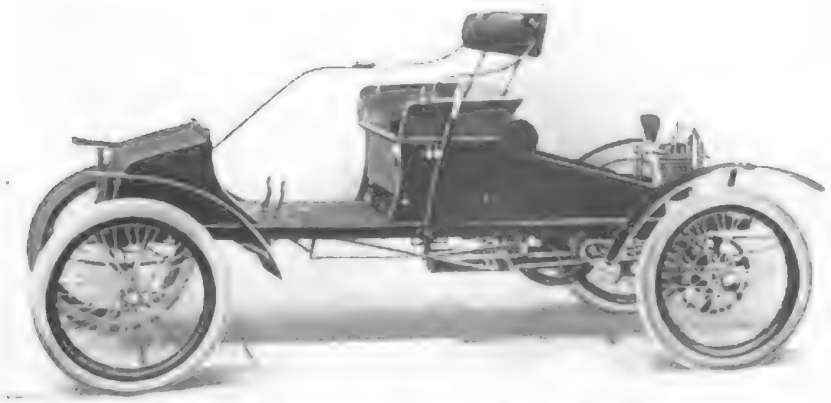
FIRST REGIMENT ARMORY

Welch Motor Car Co.
Monarch Automobile Co.
Lozier Motor Co.
Acme Motor Car Co.
Adams Co.
Blomstrom Motor Co.
Wolverine Automobile Co.
Reo Motor Car Co.
Maxwell-Briscoe Co.
Buffalo Electric Co.
Marion Motor Car Co.
Rapid Motor Vehicle Co.
Moline Automobile Co.
Dolson & Sons.
C. P. Kimball & Co.
Cleveland Automobile Co.
Lear Automobile Co.
Synnestvedt Machine Co.
Wayne Works.
Rainier Co.
Western Automobile Co.
Berkshire Automobile Co.
Logan Construction Co.
Detroit Auto. Mfg. Co.
Kansas City Auto. Co.
J. W. Moon & Co.
Buckeye Automobile Co.
Knight & Kilbourne.
McCrea Truck Co.
Smith & Mabley.
Panhard & Levassor.
H. S. Michaels Co.
Automobile Imp. Co.



Digitized by Google

ORIENT BUCKBOARD REMODELLED



THE ORIENT BUCKBOARD AS REMODELED FOR THE 1906 MARKET

THE Orient buckboard for the coming season, fledged in its new feathers, is decidedly different in its scheme of transmitting power from the motor to the rear wheels, friction disks and double side chains now being used. The little machine is still a stoutly constructed model and the addition of a miniature bonnet used for baggage and enclosed compartment in the rear places it further from the buckboard classification than previously. As previously built the motor is not enclosed, the circular head and valve port being exposed to the atmosphere. A three-bladed fan is now carried in front of the motor, and is driven by a flat belt from a pulley on the crankshaft.

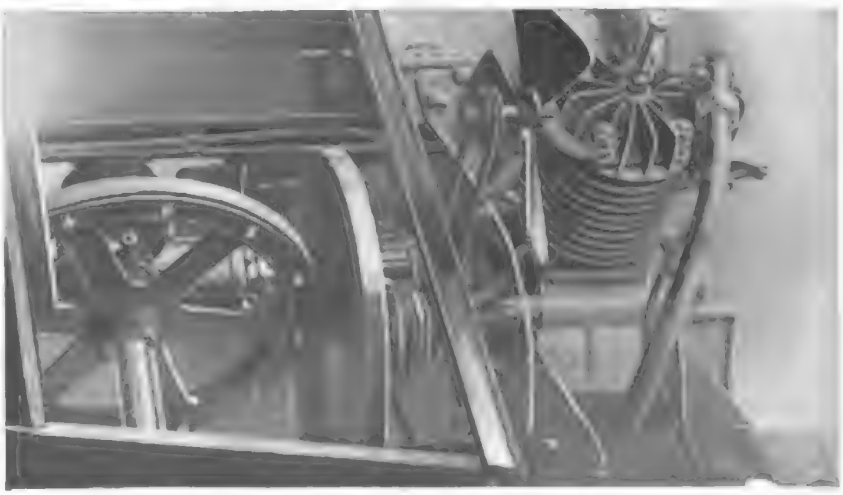
The cylinder bore and stroke are 3¼ and 4¼ inches respectively and a rating of 4 horsepower is given by its makers, the Waltham Mfg. Co., of Waltham, Mass. The cylinder head is a separate casting retained by four vertical bolts passing through the cooling flanges and the heavy flange on the bottom of the cylinder and through the top of the crankcase. The bracket carrying the fan is secured by two of these bolts. The motor hangs in a little sack-like bracket that has a central part, in which the crankcase rests, and four horizontal arms that rest on the top of the trussed main frame and bolted thereto. In fastening the crankcase to the bracketing two bolts unite them at the top of the case near where the cylinder is attached and another pair does similar duty near the base of the case. The case itself is split into two parts, held together by a series of bolts. The bearings for the crankshaft are supported in cages bolted to the case.

The single valve port is carried on the top of the cylinder, the pipe from the carbureter, carried low at the left side, connecting with the top of the housing containing the automatic valve. In the base of the port is the mechanical exhaust valve, with a muffler pipe exiting from the lower angle of the port at the right, coupled with cylindrical muffler carried lengthwise beneath the frame. The spark plug is placed horizontally in the left side of the port between the valves and receives its current from a set of dry cells connected with coil, timer and switch. The commutator is of Orient design, made with wipe contact. The carbureter is also of Orient make. A gasoline tank of 3½

REAR VIEW 1906 BUCKBOARD

gallons capacity, sufficient for 30 miles, is fitted at the rear of the seat.

The big alterations are met in the transmission which is of the friction type. On the front end of the crankshaft is a large friction disk with metal face. Forward of this and mounted on a cross shaft is a friction wheel of almost equal diameter, the periphery of the wheel being covered with fibroid. The motor friction disk is made rigid with the crankshaft but the friction wheel is slidable on the cross shaft, so that it can be moved across the face of the disk to give any range of forward speeds or reverse. This movement is given through an outside lever at the driver's left, the lever being connected by a rod with a bell crank, the end of which works a yoke on the friction wheel hub. Forward speeds are gained by contacting the friction wheel with the friction disk at one side of its center. The nearer the wheel is to the outside of the disk the faster the speed and vice versa; for reversing, the wheel is moved to the opposite side of the disk. The method of contacting the periphery of the friction wheel with the face of the disk is by a ball thrust in the rear of the disk on the crankshaft, this being brought into use by the left pedal in the footboard. This pedal has a ratchet, giving it five different degrees of contact, so that the contact can be varied. On the ends of the shaft carrying the friction wheel are sprockets for double chain drive to the sprockets on the rear hubs. On these hubs are the brakes, consisting of a pair of bands, the drums being united with the sprockets. Application is by the right pedal, the connection being through cable to the foot of the brake pedal. The motor is lubricated by a sight feed device, there being a large oiler carried on the right side for supplying the crank case and cylinder. One pint of oil is said to be sufficient for 90 miles of travel. The body and running gear of the buckboard are unique in possessing 26-inch wire wheels shod with 2½-inch single tube tires, 80-inch wheel base, an ordinary tread of 42 inches but 56-inch when specified. The trussed frame is carried on a set of four full elliptic springs, each having a length of 19 inches. This year the carrying platform of the body is not so conspicuous because of the little bonnet and the sloping back compartment in rear of the seat. Natural wood finish is retained in the body.

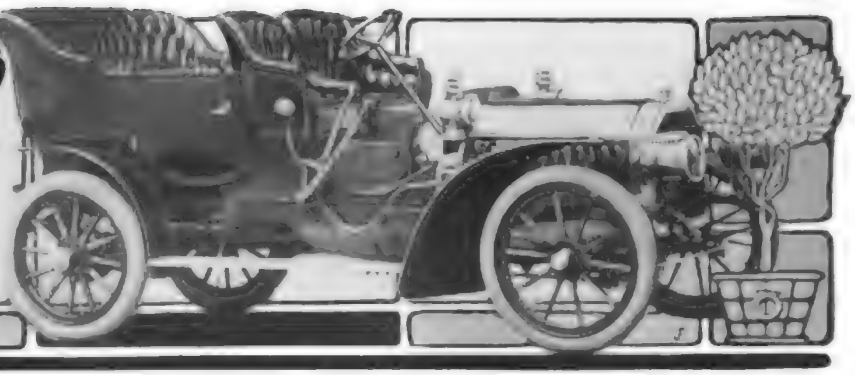


MOTOR AND TRANSMISSION ASSEMBLY SCHEME IN 1906 ORIENT BUCKS

Digitized by Google

PEERLESS FOR 1906

WITH NEW CYLINDER DESIGN



TWO 1906 models have been brought out by the Peerless Motor Car Co., of Cleveland, O.—one known as model 14, a 30-horsepower touring car accomomdating five passengers, and the other a 45-horsepower machine of the heavy touring car class. Both machines are built with most of the innovations that are the features of next season's machine and in the smaller model, described herein, all the new features are embodied. Conspicuous in the changes noted is the new motor design, with the valves carried in oppositely-placed ports on the sides of the cylinder heads and actuated by push rods acting on the bottoms of the valve stems. Not less noteworthy is the use of a leather-faced expanding clutch, the use of Hess-Bright ball bearings in the road wheels, rear axle, gear box and practically every place except in the motor; the use of a new horizontal tube radiator, new platform spring suspension and minor control features. Among retained features in the machine are the four forward speed gear box with changes made on the selective system, the sub frame for carrying the motor and gear box, arched rear axle and dished rear wheels.

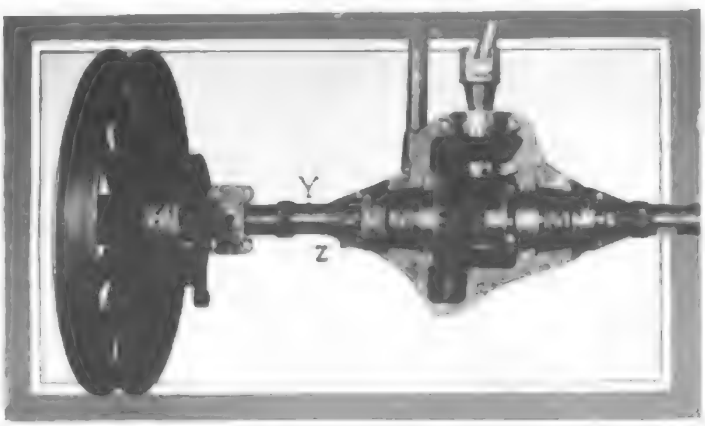
The main frame is made from cold rolled steel with the side pieces parallel throughout and braced by four cross pieces, each reinforced by gusset plates. The cross piece carrying the rear end of the sub frame has integral gusset plates, and similar plates where the sub pieces unite with it. Both motor and gear box have integral arms resting directly on the sub frame pieces. A change in the spring suspension is noted by using a platform combination in the rear, the cross part of the platform being clipped to the center of the rear cross piece, the front of the side parts being shackled to the frame in standard form. Semi-elliptic springs are used in front, with the leaves polished. The front axle is a drop forging of I section, the wheel base is 107 inches and 34 by 4-inch tires are fitted.

In the placing of both the regular and emergency brakes on the rear hubs and operating the first by pedal and the latter by side lever, this year's construction is maintained, but a difference occurs in not having the regular brakes interconnected with the clutch. This makes it easy to stop the car when ascending a hill. The regular brake is used to hold the car until the clutch has taken control and started the car up the hill. As previously, however, the emergency brakes are interconnected with the clutch, application of the former throwing the latter out. The regular brake has a band working without the cast-steel brake drum, the inside surface of the drum forming a wearing surface for the expansion shoe forming the emergency brake. In the illustration the drum is not shown. The band A of the regular brake is fiber lined, and to increase its flexibility has been split at N, where the two parts are pivoted. In holding the band free from the drum when not in use the coil spring H on the top of the band surrounds a short stem attached to the band. On the support K is a washer acting as a spring seat to retain the spring tension. The brake is applied through the bell crank L, connected to one end of the band A by pivoting and to the other end by a short lever. The emergency bronze shoe B is made in one piece instead of two, as formerly, and is carried on the bolt C, the bolt working in a slot, so that when the brake is not applied it is drawn up free from the drum by the coil spring D and at the same time the longer coil spring E holds the upper ends of the shoe free of the drum. For expanding the shoe B a diamond shaped cam F is placed between the ends of the shoe, which are enlarged for the purpose, the cam being rigid with the lever G connecting with an equalizer and the brake lever. The brake drum has a 10-inch diameter and is 2½ inches wide.

Many differences are found in the 1906 motor compared with the one in use the present season, the valves being placed in opposite ports on the right and left sides and operated by vertical pushrods from camshafts within the crankcase instead of overhead valve levers of the walking beam type. The four cylinders are cast in pairs, with cylinders, jackets, heads and valve ports forming integral castings. Aluminum is used throughout in the crankcase, which is a three-part casting, the top A with integral lugs for supporting the motor, the center B between which and the top are carried the crankshaft bearings and the bottom plate C, forming an inspection plate. The usual side inspection plates on the crankcase are not used. To facilitate the draining of oil, the bottom of the case is made with oil grooves running to oil taps. The housing D for the driving gears is at the front end, integral with the case proper, so that all gears work in an oil and dust-tight case, a plate forming the front. Between the crankshaft gear and the two camshaft gears is interposed the idler P, so that the wear on the crank pinion is not great and gear cutting danger is reduced materially, the idler causing the wear to be distributed on the shaft gear.

The cylinders have a bore and stroke of 4½ and 5 inches, respectively, and with a crankshaft speed of 900 revolutions a minute 30 horsepower is generated. Each cylinder is bored, reamed and then lapped and polished. Each piston carries four compression rings above the wristpin, the ring surfaces as well as those of the pistons being machined to give the same weight in each cylinder. Each ring is pinned against rotation and betweeen the rings and throughout the piston length are several oil grooves for distributing lubricant. The wristpin is a hollow rod pinned to one of the piston journals and lubricated by a pair of oil holes with reservoirs on the top of the connecting rod, a shouldered bushing is used to take up side thrust.

The crankshaft is a drop forging running on two end bearings and one between the cylinder pairs, the front bearing 3¼ by 1 11-16 inches, the center 3 by 1 11-16 inches and the rear 4 by 1⅞ inches. Bushings made of white metal are used and oiling is from the splash, which fills large oil

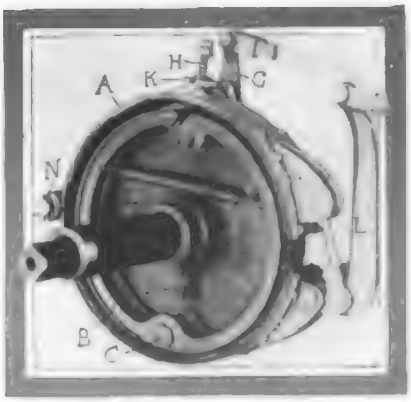


ARCHED REAR AXLE WITH UNIVERSAL JOINTS

Digitized by Google

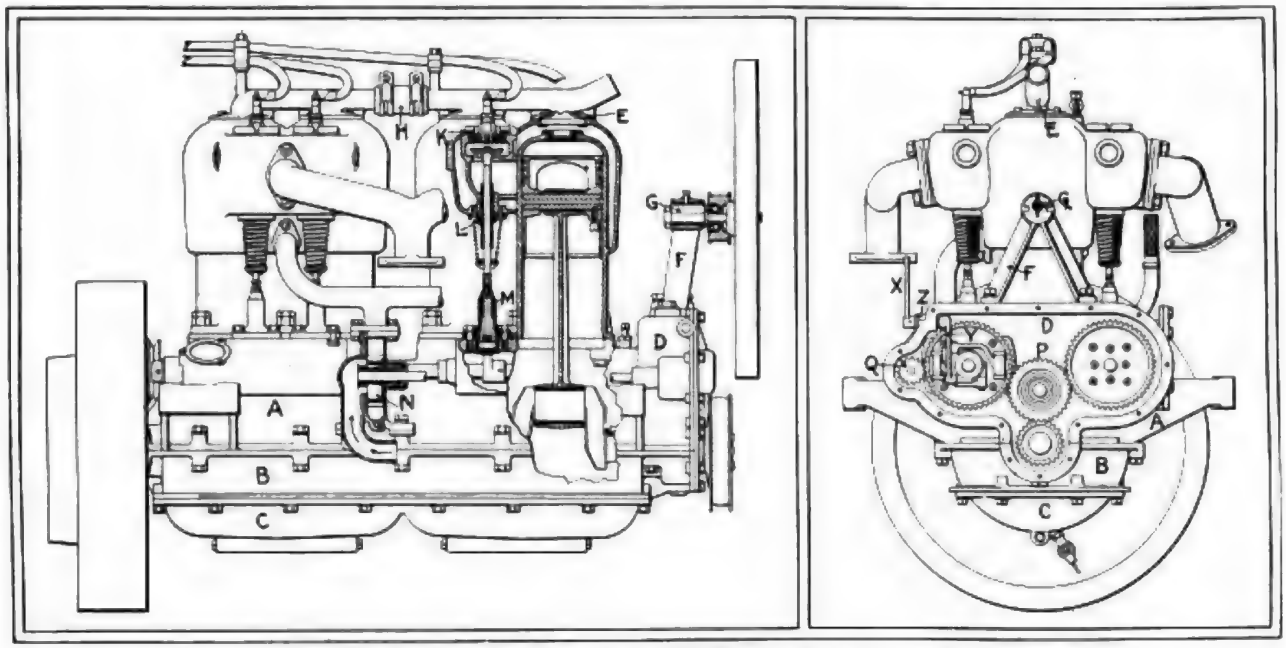
cups over each bearing from which the oil is distributed by grooves in each bushing. On the rear end of the shaft is an integral flange, to which the flywheel is bolted, the latter carrying the clutch.

In the valve disposition the intakes are placed on the right side and the exhausts opposite, each located in the upper part of the port and removable by unscrewing a cap K in the port head. Both intakes and exhausts have a diameter of 2 inches and a 5-16-inch lift, being interchangeable throughout and made with the heads and stems integral. Each stem works in a long guide L, which has a tight fit with the bottom of the port and is retained by means of a shoulder and pair of screws. The top of the valve spring rests against the bottom of the sleeve shoulder and the sleeve projecting downwards practically the entire length of the spring, supports the valve stem throughout its length. Push rod construction is standard, the rollers being held on the



EXPANDING FRICTION CLUTCH

The governor is of the standard centrifugal type and connects with the throttle in the intake pipe through the arm X, which has a long bearing in the crankcase at Z and connects with the governor weights through the arm Y. The spark control on the steering wheel is a thumb lever on the throttle arm or lever, working in a semi-circular quadrant, the object of carrying the spark lever on the throttle arm being that the two are always together, one hand sufficing to care for both. The throttle lever is connected with a worm shaft within the steering column, which raises or lowers a sleeve connected at its lower end with the throttle, but the spark lever is on a short arm with an offset, in the center of the column, with a vertical rod in the column attached to the offset, so that a movement of the lever raises or lowers the center rod, which has bell crank connections with the commutator. Ignition is by jump spark, with current taken from storage battery carried on the running board to a quadruple coil on the dash, and gear driven commutator located on the right side of the motor just back of the rear cylinder and driven by bevel gears from the inlet camshaft. The commutator is set at an angle of 60 degrees, so that all of the oil within the case will not work out through the bearings. Instead of a contact brush in the commutator a roller contact is used, the roller running in oil in order to eliminate wear. Spark



INLET SIDE AND FRONT END VIEWS OF THE 1906 PEERLESS FOUR-CYLINDER MOTOR

cams through coil springs M within the rod housings, the coil resting at its upper end on a collar of the housing and at its lower end on a collar on the push rod. The camshaft is 13-16 inch in diameter and runs in white metal bearings.

Mixture to the motor is supplied from a float feed carbureter of the auxiliary air valve style, the latter under spring tension. Surrounding the mixing chamber is a water jacket supplied with water from the cooling system. The carbureter is carried close to the cylinders at the right, so that a short Y piping serves to connect each pair of cylinders and the throttle is under control from the steering wheel and also from a governor carried on the inlet cam gear.

PLATFORM SPRING SUSPENSION AT REAR

plugs are placed in the valve caps.

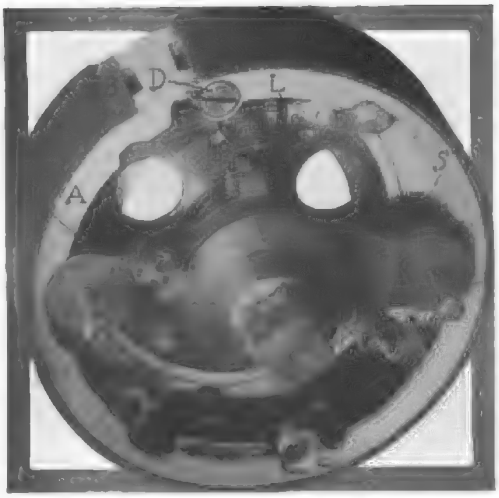
Water circulation is maintained by a gear-driven centrifugal pump N on the right side of the motor, the gear being housed in the same compartment with the cam gears. The water is taken from the base of the radiator and delivered to the lower part of the jackets, the entrance being between the inlet valves at the right side. Instead of leaving the top of the jackets through small openings, the top of the jackets are made open and large plates E cover the openings and form the union with the pipes to the radiator. Between the pairs of cylinders is a hose connection H, giving a flexible union, so the the cylinder vibration little effect on loo

Digitized by Google

the uions in the water system. The new radiator is built on the flat tube principle, the entire frame work carrying the tubes and forming the tanks made in a single casting. The tubing consists of a set of three tubes one behind the other and the set covered by a single flange perforated with small holes and having ragged edges. The fourteen sets of cross tubes thus form a continuous path for the water. The bottom cross tube is connected at one end to a collector or tank in the base of the radiator casing, to which is coupled the piping to the pump, and in this collector is a drain cock for emptying the radiator. In rear of the radiator is a rotary fan belt-driven from the crankshaft. The fan is carried on a bracket F resting on the motor casting, and has an eccentric bushing G carrying the fan shaft, by means of which the adjustment of the fan belt can be changed at will. The shaft runs on roller bearings with oil tight cases.

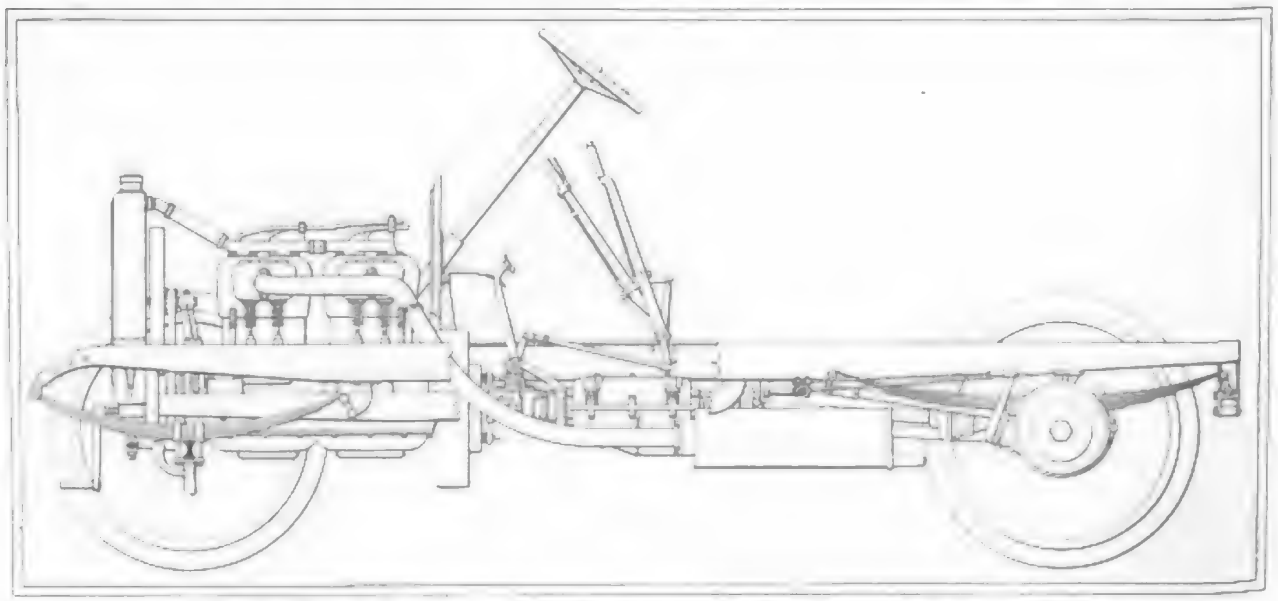
Motor lubrication is cared for by a sight-feed lubricator on the dash, oil being pumped through the leads. One lead passes to each cylinder and others to each of the crankcase compartments, so that oil after passing around the pistons and lubricating the wristpins drops into the base, supplying the splash, from which the crankshaft bearings are supplied. Steering is by an irreversible worm and segment gear, the column with the worm being carried on races of ball bearings, and in the steering knuckles are other ball bearings for carrying the weight of the front part of the car.

The cone clutch of the present season has been dropped and in its place is one of the expanding type, the friction part of which is a leather lined steel band expanded by a pair of coil springs. The general construction of the clutch can be followed from the illustration, all but two of the expanding parts being shown. The expanding band is 3 inches wide and the clutch diameter is 10 inches. The clutch shaft M has its bearing on the continuation of the crankshaft and the end connecting with the shaft to the gear box is squared, with oval surfaces, so that the two-part steel clamp fitting over it gives the same elasticity as a universal joint. The clutch carrier A is an aluminum casting surrounded by the broad steel band B with its leather facing C. At one end the band B is anchored to the carrier by the stud D, but at the other end is attached to the hollow lug F, which has opposite to it a similar lug E secured to the inside of the band B. In expanding the band it is necessary to force the lugs E and F apart, this action expanding B within the flywheel. In working this expansion there is a double oppositely-threaded stud L, one of the threads of which enters the threaded lug E and the opposite one the threaded lug F, both of which are made with internal threads to receive the worm L. The coil spring S and another at the opposite side of the clutch force outwardly the double arms K, which also carry the collar for attaching the arms H, which are connected with the clutch pedal for disengagement. As the springs S force the arms H outward a short arm, with ball and socket connections at one end with H and at the other end with an arm depending from the stud L, partly revolves the stud. It will be remembered that L has the opposite double threads and this part of a revolution is sufficient to separate the lugs E and F to give positive drive between the band B and the flywheel. The stud L is notched on its top surface where it meshes with a screw, used for varying the adjustment should the clutch slip. In disengaging, the clutch pedal forces the arms H into the flywheel against the tension of the springs: the arm is also forced in, and another arm, being carried in the same direction, accomplishes a part revolution of the stud L, thereby drawing lugs E and F closer together and withdrawing band B from contact with the flywheel. The ends of the arm fitted with ball and socket joints are adjustable by means of small screws. Within the hollow part of the clutch shaft M are small end thrust ball bearings. The entire mechanism is protected by covering from dust and wind.



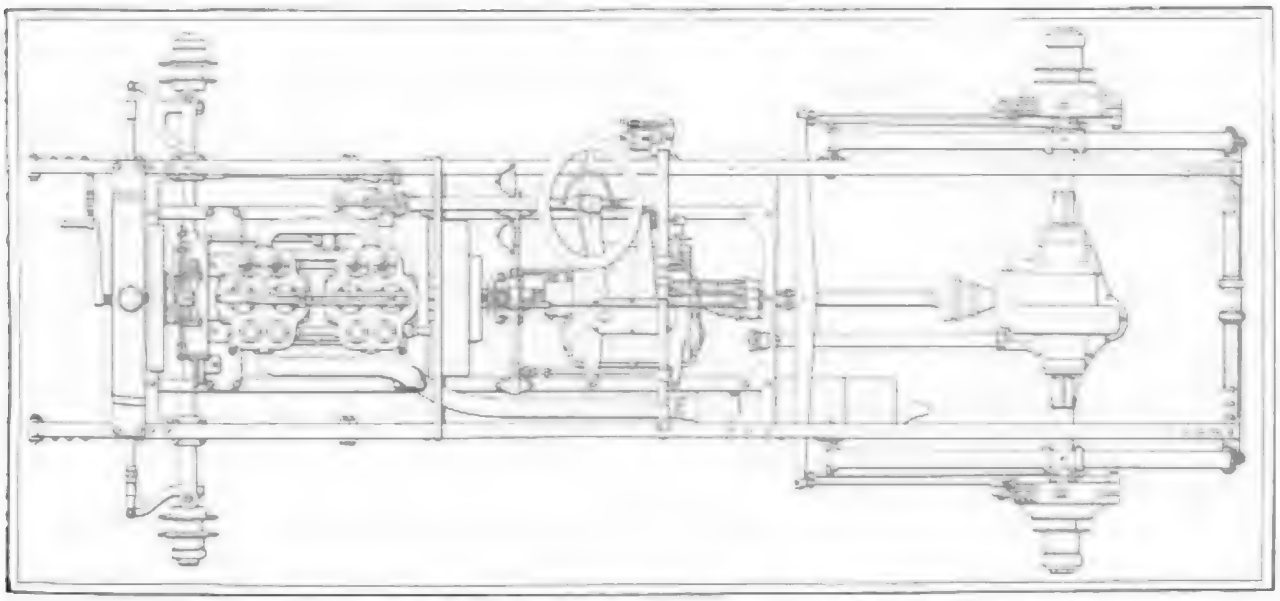
Peerless Expanding Clutch

The success given by the present type of gear box in which changes of speed are made on the selective principle without passing through gears has led to the maintaining of the gear set practically as it was, with the exception of minor changes. The use of Hess-Bright bearings in all parts of the case in place of plain bearings as used this season is in keeping with 1906 tendencies and the use of a double set in the large bearing for the front end of the main shaft is a guarantee of strength. The four forward speeds and one reverse are gained by one lever working in a three slot quadrant, the two outer slots having forward and back positions



Exhaust Side of Peerless No. 14 Chassis, Showing Operating Devices and Spring Suspension

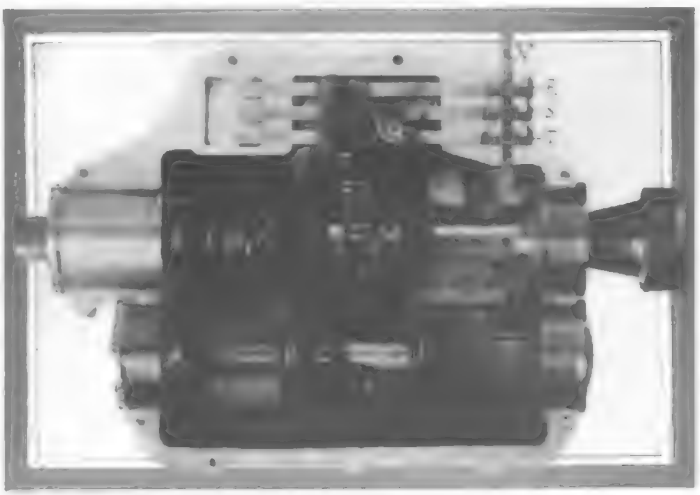
Digitized by Google



PLAN VIEW OF PEERLESS NO. 14 CHASSIS, SHOWING NEW MOTOR AND MOTOR AND GEAR CASE SUPPORT

and giving the forward speeds and the inner one having a forward position only for the reverse. The interlocking system has been retained. The method of carrying the gear box by the top half is an old feature, there being four integral lugs for resting on the sub frame. By carrying the bearings between the case parts and having the lower part removable by simply dropping it, the maker claims it is easier to replace gears. A feature of the aluminum case is the scraping of the inner surface, the object being to remove particles of sand from the casting cores.

In obtaining different speeds it must be remembered that three sliding units are used—the first consisting of the two gears H and K, which are made integral; the second of gears L and M, bolted together and the third the reverse idler N, in the base of the case, which is in mesh only when in use. For direct drive the unit H-K is moved forward through the arm P, so that H with its internal teeth slides over gear F, which is made integral with gear E and both are carried on the clutch shaft W, whereas the unit H-K is on the squared main shaft. In this way the clutch and main shafts are locked together and the drive is direct along to the rear axle. For third speed gears K and B are meshed, the drive then being from the clutch shaft through gears E and A to the counter shaft, thence from the latter to the main shaft by gears B and K. For second and slow speeds the unit L-M is used, gear L meshing with C for the former and M meshing with D for the latter, the arm Q serving to slide the unit L-M. In reversing, the gear N, made double the width of others, is moved forward so it jointly meshes with gear D on the countershaft, and M on the main shaft, the latter gears being as shown in the illustration, the idler having sufficient width of face to mesh with both. The method of sliding the three units is through the three shifting rods R, S and T secured respectively to the arms P, Q and O, connecting with the sliding units. If direct drive is wanted an arm depending form the sleeve carrying the change speed lever slides into the large notch on the outer end of the shifting rod R and at the same time the interlocking arm V, which works through a series of slots in the under surface of the three shifting rods R, S and T, has one slot in its upper surface and when this slot is brought beneath the rod R the rod can be moved to the front, while the rods S and T are locked against similar movements by the part of the interlocker V, which has no slots in its upper surface. With the shifter R free it is moved to the front and H is meshed with E. When the second or slow speed is wanted the shifting rod S is needed and when the lever at the driver's right is moved sidewise to bring it into the quadrant for these speeds, the interlocker V is simultaneously moved, so that the slot in it is directly beneath the rod S and it is free to move either to the front or rear. The button on the shifting lever at the driver's seat is only used on the reverse, the lever when in the center of the quadrant being free to move into either slot, but it cannot enter the reverse until the button is pressed. Drive to the live rear axle is through a propeller shaft, the shaft being relieved of all strains from the axle by a torsion rod. The Peerless rear axle is arched so the road wheels are dished 2 degrees. The arching is made possible by the use of universal joints in the drive shafts at either side of the differential, the joints being of the simple jaw variety and contained within the outer part of the differential housing. The joints are shown at X in the view of the axle, and at Z in the same illustration is shown the manner of bolting the differential housing to flanges on the axle housing Y instead of brazing or pinning it in place. Another rear axle change is the brazing of the plates on which the springs rest in place and the use of radius rods from the axle housing to the side pieces of the main frame. A spur gear differential is maintained, but Hess-Bright bearings have been installed throughout the axle, being used for end thrust at one side of the differential and also against the propeller shaft. Adjustments are fitted for both the large bevel on the differential and the small bevel pinion on the propeller shaft.



PEERLESS FOUR-FORWARD SPEED GEAR SET

Digitized by Google

From The Four Winds

Transporting Fox Hounds by Motor Power to Hunting Grounds Near Nashville, Tenn.

Right Way—The bishop of Liverpool has been presented with an automobile by his diocese in England and to make the present a good one the sum of $700 a year for 6 years has also been settled on him for the maintenance of the car.

Ex-Mayor Tours—Ex-Mayor James D. Phelan, of San Francisco, has returned from a long visit to Europe, on which Miss Phelan accompanied him. Mr. Phelan made an extensive tour of France, Germany and Spain in his new Mercedes car. They visited many out-of-the-way, primitive places.

Chadeayne On Road Again—W. C. Chadeayne, the motor cyclist who recently completed a record-breaking run from New York to San Francisco, left the latter city Thursday, November 16, for Los Angeles, from where he will travel on into Mexico. Chadeayne will not attempt any records on the run down the coast, owing to the poor condition of the roads.

Good Work—The Grand Forks Automobile Club of Grand Forks, N. D., is reported to be doing great work in the cause of motoring. Its work in the last legislature, when it defeated a bad law and was instrumental in the passage of a good measure, is its chief claim to fame. It is claimed to be the strongest motoring organization west of St. Paul and Minneapolis and east of San Francisco.

Prize to a Steamer—F. F. N. Baldwin, in a steamer runabout, captured the time prize, the Knight cup, in the annual hill-climbing contest of the Rhode Island Automobile Club up Stump hill, near Pawtucket, R. I., last Saturday, going up the incline in 35⅘ seconds, with B. F. Blackinton, last year's winner, 10 seconds behind. Arthur S. Lee, in a 30-horsepower Pope-Toledo, won the class for big cars.

Kick From Farmers—A halt has been called in the building of macadam roads around Binghamton, N. Y., because the farmers in the territory object to keeping good roads in condition at their own expense. The supervisors are reported to believe that the cost of maintenance of a road should be borne in the same proportion on which it is constructed; that is, the state should pay 50 per cent, the county 35 per cent and the town within which the road is located 15 per cent. The farmers believe the motorists should help pay and it is reported that a movement has been started whereby automobiles will be taxed for the maintenance of roads. It is expected this tax would amount to about $400,000 a year, which could be used keeping macadam roads in condition.

Still Homeless—The question of new permanent quarters still is in abeyance before the Milwaukee Automobile Club. The committee appointed by President Sherburn Becker has several sites under consideration, but as yet no definite action has been taken.

Owners to Organize—Rumor has it that a number of owners of automobiles at Toledo, O., will form a company to erect a new automobile garage in the heart of the business district of the city. It is said that the company will be capitalized at $50,000. Toledo now has six garages, and if this project materializes the city will have double the garage space it had a year ago.

Road Money Goes Begging—Mrs. Howard Gould, en route from Virginia to New York city in an automobile, stopped long enough in Philadelphia to give the newspaper men there her impressions of the roads, especially those between Baltimore and the Quaker city. Her opinion corresponds with that of Wizard Edison, who, a few weeks ago, handed out several uncomplimentary jabs at the road system of the keystone state. The fact that at the last session of the Pennsylvania legislature there was passed a good roads bill, calling for the expenditure of upwards of $6,000,000 in 6 years, would naturally lead the outside world to believe that a great road improvement boom was on in the state. Not so. The terms under which the state offers its aid to the counties and townships are, in many cases, considered to be unfavorable to the latter, the result being that there is no rush to take up the state's offer. It is even intimated that this state of affairs was foreseen by unscrupulous advocates of the bill, who, with a big balance in the favored treasury banks, saw good opportunities of borrowing money at low rates of interest to advance private schemes. Had the terms offered to townships and counties to embark on road improvement been as favorable, for instance, as they are in New Jersey, the full amount appropriated would have been quickly applied for, and there would have been no uncalled-for balances in the treasury for the use of favored political borrowers. The real good roads advocates of the keystone state are hoping that the recent political revolution will result in the passage of a law that will prove satisfactory to all hands.

Motor Wagon Freight Line—W. J. Morgan, promoter of the southern circuit races, who has just returned from Florida, says three express companies have been formed, and will run motor wagon freight lines over the new road between Miami and Palm Beach. This road is 60 miles long and will be completed by January 1.

Quizzed by Uncle Sam—The good faith of the advertisement printed in Minneapolis papers by Arthur H. and Dwight E. Jackson is questioned by the United States postal authorities, who brought them before United States Commissioner Abbott to explain an advertisement which offered for sale a 1904 White steamer for $600, the car to be shipped for inspection on the payment of $300. It is said in the complaint that a machine of inferior make and not worth $300 was forwarded. Using the mails with fraudulent intent is charged. The men were held to the next federal grand jury.

Roosevelt Relents—President Roosevelt has decided that Walter Eldridge, chauffeur of the bureau of standards of the department of commerce and labor, had just provocation for his profanity when he got in front of the president's carriage with his automobile, causing his dismissal. He has been reinstated. Eldridge became confused when ordered to get out of the way by the secret service men and turned in front of the president's carriage. Irritated by the detectives' calling down, he dropped a choice swear word which caused the president to abrogate about half the merit law and fire him.

Good Roads Missionary—Asa Goddard, chairman of the routes and maps committee of the A. A. A., will start this week from New York on an extended tour in an automobile, in the interest of the national organization. He will first work toward Boston, by the shore route, via New London and Providence. He will carefully remeasure the distances, so as to bring the route cards up to date. He will also make appointments of official hotels and garages. Nor will his work end here; for he will do recruiting work also among clubs and individuals. In fact, he will act as a peripatetic A. A. A. missionary a-motor.

Stirs Up the Farmers—Farmers along the road from Chicago to Cincinnati are reported to be up in arms and searching for Frederick Innes, a Chicago bandmaster who recently drove from the windy city to Cincinnati in a motor car to win a bet from a friend of his who wagered he could not cover the distance in a certain time. On the way Innes worked up a race with another friend, L. G. Conn, of Elkhart, Ind., the loser to pay for a trip to Europe. The bandmaster lost his first bet by 52 minutes, but the second he won. So fast did he skate across country that he left a trail of angry country people behind him, who vow they will make him pay for his

Digitized by Google

speeding. It is this kind of work that stirs up the enmity of the people and starts the motorphobists talking.

Helped Jolly a King—Dr. W. A. Spring, an American dentist who resides in Dresden, took part in the recent demonstration in honor of the king of Saxony, his Winton car, gayly decorated, occupying a prominent place in the parade, Dr. Spring himself being at the wheel.

Must Slow at Corners—Commissioners of the District of Columbia are considering the advisability of amending the police regulations by requiring automobilists in turning street corners on streets outside the fire limits to slow down to 4 miles an hour. Many complaints have recently been made that automobilists in the outlying districts are very reckless in turning corners, and it is likely this practice will be curbed by framing a regulation to cover it.

Horsemen Holler—The big Scoing Philadelphia rubber wagons, which, like all automobiles in the Quaker city, have the run of Fairmount park, are getting themselves disliked by the horsemen, who claim that the leviathans frighten their animals. At a recent meeting of the park commissioners an appeal was received asking that the huge machines be either prohibited the use of the park or compelled to restrict their operations to certain roads well away from the east and west river drives and other main arteries of travel through the people's popular pleasure ground.

Enough For Miller—Evidently Major C. J. S. Miller, whose big Fiat car was driven so successfully by Chevrolet last summer, has had enough of racing, for it is now announced he had changed it into a touring machine, a light tonneau with a seating capacity for five having been put on. S. B. Stevens is another who has converted his racing car into a touring rig. Offsetting this, racing is said to have gained a recruit in George Gould, who has ordered a 40-horsepower French car with a light racing body, which the enthusiasts are counting on seeing in the Ormond competition. Ostensibly the Gould car is intended for use on the grounds of his country home on Long Island.

Aid to Fox Hunting—In Nashville, Tenn., an automobile owned by Professor J. F. Draughon is put to a novel use. To the automobile is attached a trailer designed by Professor Draughon. The trailer is attached to the automobile by a coupling similar to that used on railway cars. The trailer holds twenty dogs and has an upper deck. Tents are carried on this part of the trailer, while underneath is a compartment which is used to carry cooking utensils, etc., in the event a long hunt is planned and executed. Some of the best hunting grounds are about 15 or 20 miles from the city and it was for this reason that the professor hit upon the plan of attaching a trailer to his car, as by so doing he is enabled to leave Nashville late in the afternoon and yet reach the hunting ground on time without worry or loss of time from his business and turn his dogs loose fresh and ready for the sport. When he arranges for a trip at some distance he sends his horses to the hunting place or some convenient rendezvous in the afternoon and when he and his friends arrive in the afternoon the horses are saddled and the dogs let out of the trailer fresh and the fox is soon going. After the chase by special signal the dogs come in, get into the trailer and the hunting party is soon on the return trip to the city.

Chip on Oldfield's Shoulder—Barney Oldfield, who was in Philadelphia last week with his new Peerless racer, en route to New York after a trial of the flyer on the Ventnor-Longport beach course, below Atlantic City, announced he has the car that can win the Florida 2-miles-a-minute race. George T. Thompson, of the Eastern Automobile Co., of Philadelphia, which handles the Peerless, stated that Barney was anxious for a real try out of the car and was especially anxious to get a chance at the Thomas Flyer, on road or beach, and at any distance, for any amount from $500 to $1,000.

Contest for Cups—The first of the month the competition for the mileage and touring cups offered by the Cleveland Automobile Club will be decided. The mileage cup goes to the club member who owns the automobile which has made the greatest mileage over the streets and public highways between May 1 and December 1. The other trophy is for the member who has toured the most extensively in the same time, no trip of less than 100 miles being considered. It must also include at least 1 night's stop in a different locality from that in which the original start was made.

Another First One—The oldest inhabitant is claiming that to Rev. J. Carhart, who resided in Racine, Wis., in 1870, belongs the credit for making the first automobile in this country, it being asserted that 35 years ago the minister turned out "a four-wheeled concern resembling an old-fashioned buckboard, with a vertical steam engine attached to the rear axle. Out of necessity it was noisy, and is said to have been erratic in proportion, showering sparks in profusion. Many runaways were said to have been caused by it in the public roadways, and when one day a valuable race horse, a descendant of which was Jay-Eye-See, the famous trotter, was killed in a mad dash from terror at Carhart's automobile, it was banished by law," says the chronicler down in Texas, who is anxious that the minister be given proper credit for his inventive genius in the automobile line.

Lighthouse Story Revamped—The usual quota of automobile hunting experiences is making its appearance with the opening of the gunning season. New Yorkers who were returning to their quarters near Rising Sun, Md., after rather poor success with the gun, so the latest story goes, were startled to have a bevy of wild ducks dash against their machine in the darkness. It appears that the brilliant searchlight on the front of the car dazzled the birds, and they flew against the glass shield in sufficient numbers and with such force as to shatter it into fragments. When the party jumped out and had gathered in the stunned birds their day's bag was of quite respectable proportions.

Chain of Garages—Dave Hennen Morris, the incoming as well as retiring president of the Automobile Club of America, had some interesting recommendations to make in his report, read at the annual meeting. One of them was decidedly radical. Not satisfied with the establishment of a club garage, with accommodation for 350 cars, he made the suggestion that the club establish other garages on the east side, down town, in Long Island and in West Chester and New Jersey. There are some 1,000 cars owned by club members. Many, no doubt, would continue to be stored in the public garages devoted to particular makes, that their owners might have the advantage of duplicate parts at hand and repairs by workmen directly familiar with the machines. With the enormous number of cars now in this city and thousands more likely to seek storage facilities next season, the A. C. A.'s new scheme is not likely to create even a flurry of opposition in the trade, as the club garages could, of course, be open only to the cars of the members. Much doubt, though, is expressed of the practicability of this utopian scheme of President Morris.

American Automobile in Parade Given in Honor of King of Saxony

Digitized by Google

THE REALM of the COMMERCIAL CAR

WHEN it was announced in the Fitchburg, Mass., papers some time last June that Fitchburg would in the near future have an automobile service of traction to nearby towns and villages not directly on the steam or trolley roads, it was skeptically received. However, it is now an accomplished fact and, what is more, has proved a big and popular success from the start, thanks to several wideawake merchants and professional men of the place, whose foresight saw the possibilities of trade being brought to that city from the outlying districts.

The Fitchburg Auto-Transit Co. is the title of the new line of passenger conveyance, and the first run was made on July 4 this year, when two large motor wagonettes or buses, made by the Knox Automobile Co., of Springfield, Mass., were placed in commission and quickly forged their way into the good graces of the public, both in Fitchburg and other places to which they ran—Ashby, West Townsend and Townsend, places lying to the north and west and close to the New Hampshire boundary. It was at first suggested that the service should be between Fitchburg and Greenville, N. H., via Ashby and Townsend, but it was found that with the limited vehicles employed it would be impossible to provide a satisfactory time schedule and the second named place was cut out of the proposed plans. Since the beginning of the service four trips have been made daily from Fitchburg to Ashby and also four to Townsend, but owing to the condition of the road to the last named place it has been reduced to three, which number of trips has been maintained continuously to the present time. That the instituting of the line has been successful is shown by the fact that over 700 passengers were carried weekly by the machines between the aforesaid towns, the fares of which were 25 cents and 35 cents for each person in either direction.

After the new service had been in operation a short time applications poured into the company's offices from managers of clubs and other societies for the conveyance of their members to places of interest in the state and elsewhere. The company yielded to the popular demand and two touring cars, each capable of carrying fourteen passengers, were built to special order and supplied by the Knox concern. In these cars parties have been conveyed to such places as Brattleboro, Vt.; Boston, Taunton, Springfield, Worcester, Winchendon, Webster, Gardner, Wachusett Mountain, Mass., and several places in New Hampshire. On one occasion 150 people from a local church were carried from Fitchburg to Wachusett lake and back without any semblance of a mishap, the outing being both novel and enjoyable to all concerned.

The run from Fitchburg to Ashby is really a pleasant one, the road—a state one—being well laid and fairly level, with the exception of a couple of pretty steep hills, one being just beyond the city line, and the other entering Ashby. The average speed is about 10 miles an hour, the rate of propulsion ascending the steep hills being about 5 miles on the low or second gear. Many pretty sights are to be witnessed on the Ashby trip, snug farm houses nestling among the hills and in the valleys, while wooded slopes and silvery streams abound on the way. The terminus of the line at Ashby is the Elmwood hotel, a famous hostelry, 108 years old, where the old stage coaches from Boston, Peterboro and Keene, N. H., stopped in bygone days for a change of horses. There at the Elmwood a motorist, whose appetite has been whetted by the exhilarating automobile trip and the fine fresh air, can have the inner man well supplied at a small cost, which makes it the Mecca of near-by motorists.

So far as scenery goes, the Townsend route is equally fine, but the roads, though fairly level, are in an extremely bad condition until West Townsend is reached, when a fine piece of macadam state road, wide and level, is struck. A place which attracts the attention of the passengers on the run on the Townsend route is the Bruce farm, which is occupied by George Duveney, a French Canadian, and his family, numbering in all thirteen members. The house or shack—it is nothing more than a flat-topped wooden erection, which is more fit for a wood or coal shed—is 3 miles from the school at West Townsend, to which place several juvenile members

PRIVATE PARTY ON OUTING IN LARGE FITCHBURG BUS

Digitized by Google

Passing the Celebrated Bruce Farm, Where Thirteen Lively Children Rule Supreme

of the family are conveyed in a team every morning and taken back in the afternoon.

The opening up of Townsend by the Auto-Transit Co. has not only proved a boon to the residents, but also to the drummers, who can now make their calls and get back to the city the same night, where formerly they were compelled to make an overnight stay.

One of the most satisfactory features of the working of this new automobile service is that not a single accident has marred the running of these machines from the commencement, with the exception of several minor mishaps that have not interfered with the schedule of trips.

The cost of operating so far this season has been reasonable, 1 gallon of gasoline being sufficient for each machine to travel 8 miles. The total cost of running each machine, including man, repairs, rent of garage, gasoline, oil, carbide, etc., etc., amounts to 10 cents per mile. The future plans of the company, of which two well-known Fitchburg men—Horace F. Gove, president, and Ernest C. Ford, secretary and treasurer—are at the head, are bright and it is expected that at the general meeting of the company in the near future outlines of new machines and the opening up of new routes will be submitted.

CHANCE FOR A PROMOTER

While the opportunities for motor bus investments are probably more numerous than interested capital could just now care for, local motorists have wondered why some one has not investigated the possibilities for a paying commercial car venture in Salem, O. Particularly attractive is 10 miles of cross-country roads between Salem and Lisbon, the latter city the county seat. At present the only connection between the two points is an unpretentious railway line, with limited passenger service. In spite of this, the travel is heavy and many drive daily, Salem's population being about 10,000 and Lisbon's 6,000. The road is in good condition, its objectionable features being two hills, one about a quarter and the other about a half mile in length, but of only moderate grade. Almost half way between the two cities is Shelton's grove, a popular summer park, which would be very liberally patronized should a regular bus line offer a more convenient mode of travel. It is the nearest park, of any consequence, to Salem. Salem has 13 miles of paved streets and only about 4 miles of street railway. Consequently, there is a crying demand for the transportation facilities that a motor bus line would meet. Two long avenues, extending from the northern to the southern boundaries of the cities, have no car lines and will probably never have, because of the aversion of certain property owners who do not wish to see the pavement disturbed. Residents who live on these avenues would welcome a motor bus line enthusiastically, it is asserted.

Small Car on Townsend Route Leaving Fitchburg

TALK OF STEAM LORRIES

Testimony as to the reliability and practicability of a steam lorry has been given to the Thornycroft company of England by Vickers Sons & Maxim, who have been using one machine continuously for 5½ years. It is fitted with a 25-horsepower engine, supplied with steam from a high-pressure tubular boiler. Cannon & Gaze, a concern in Kent, have been using one of these lorries for 5 years. A sample of a week's work shows it travels 176 miles in that time, carrying 23 tons. This only includes 5 days, 1 day being taken to clean out the boiler. Coal bills, they say, are under 1 ton a week, while the repair bills generally run under $350 a year. To start out with, this lorry was designed to carry 3 tons and haul a trailer with 2 tons, but it proved more economical to discard the trailer and load the wagon with from 4 to 5 tons. The concern thinks the lorry a great saving, as most of its journeys would be too far for horses, while the railway rates and carters, delivering at the other end, would eat up the profits.

Another testimonial on the merits of the steam lorry is given by Smith & Forrest, oil refiners and importers at Manchester, England, who have a lorry and trailer which have been working nearly 3 years and in that time have run 13,169 miles and carried nearly 8,000 tons. The rig is used to carry pitch or oil for road

Digitized by Google

GUNNER'S ENTRANCE, GERMAN MILITARY WAGON

repairs within a radius of 15 miles of the plant. It is enabled to deliver direct, and thus save a lot of time. They ascribe some of their success with the lorry to proper lubrication, care being taken that the motor cylinders are well supplied with a proper quantity of heavy, high test oil, other grades not standing the heavy service of the machine.

ARMORED MILITARY CAR

It has remained for the Germans to bring automobile construction to bear on warfare and one of the most recent developments along these lines has resulted in an armored automobile with conning tower and a rapid fire gun attachment. The machine is from the workshops of the Daimler people. As yet it is an experiment, but recent tests show that it ought to in a short time realize the dreams of military experts who have been for years looking forward to a safe and rapid conveyance for heavier arms. Light pressed steel is used as a covering for the motor hood and the same material is used to shield the gears and the driver's seat. Needless to say, the conning tower is also covered in the same way. The steel is scarcely ½-inch thick and the whole conveyance weighs little more than some of the heavier types of touring cars. The driver is seated in a compartment separate from the tower part, but may enter it through a connecting door. Two small openings in the front give him an opportunity to see the road before him and to guide the car. A smaller opening between his compartment and the tower permits the gunner to direct him. An outside door fastened on the interior permits him to leave the car if he so desires. The tower has plenty of room inside for the gunner and the machine gun and also the ammunition, which is stored in compact apartments. The top of the tower through which the gun is pointed can be rotated so that the fire can be directed to any quarter. The gun by its machinery can be projected or withdrawn from the opening as the gunner desires. The driving power is to the four wheels, making it possible to climb steep grades. A 60 per cent grade is mounted as easily as the ordinary touring car climbs a slight hill, it is claimed. Without the four-wheeled drive this would be altogether impossible.

In the tests recently made, the machine made an average speed of 25 miles an hour on the country roads and made detours into broken fields and roads with marvelous ease. At all times it showed itself capable of covering the ground and being maneuvered with remarkable ease. The test as to its ability to maneuver on broken ground was watched with especial interest by members of the military, to whom the question of handling guns on heavy ground is of great importance. The motors are four-cylinder, 40-horsepower, of the Mercedes type and are more solidly built than the average touring car motors. During the test not a break or strain or heated bearing was evident. The question of the armor plate has caused considerable discussion among the experts. The plate used in the construction of the armored automobile is of sufficient thickness to shield the gunner and driver and the motors from light ordinance such as used by the machine and by cavalry and infantry. Heavier plate cannot be used, since it would make the machine too heavy and unwieldy. It has been the desire of the makers to have a machine light enough to travel rapidly and cross light bridges and at the same time be armored and also effective as a carrier of dispatches and messengers.

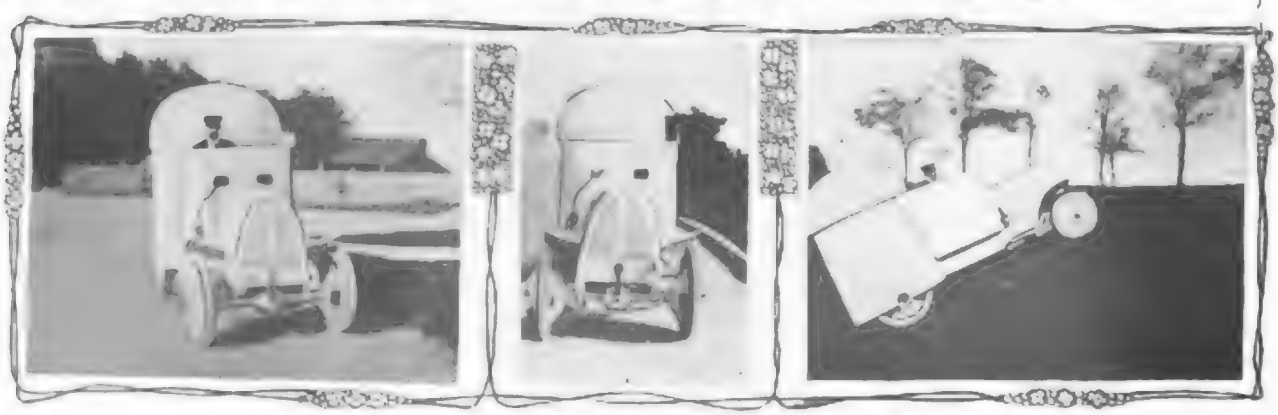
Accurate measurements of fuel and other tests have not yet been made, but it is believed by those who have watched the machine work that it can be handled as economically as to fuel and repairs as the ordinary freight truck in use in many of the larger German cities.

The encouragement with which the builders of the armored automobile have met in the tests has caused them to announce that they have under construction a motor boat, eight cylinders, 220-horsepower, which will be armored and fitted with a rapid firing gun. The boat will be given a test, it is said, in next year's motor boat trials at Monaco. It will, they declare, be a revolution in the building of dispatch and small torpedo boats.

This same firm is said to be working on a light armored hospital wagon which will be able to carry aid to the wounded in the thick of battle.

BUCKEYES LIKE THE IDEA

R. M. Owen, proprietor of the Ohio Oldsmobile Co., of Cleveland, whose establishment was recently moved to 27 Vincent street, back of the Hollenden hotel, the old stand of the defunct Cleveland Automobile & Supply Co., has been able to work extensively into the commercial vehicle side of the game. He fitted up the Springfield-Jamestown automobile bus line, which was the subject of a recent article in MOTOR AGE, and last week he sold two Olds buses to John Jenks, of Mechanicsburg, O., who will operate an automobile stage line between Mechanicsburg and Urbana, giving regular two-hour service to connect with traction lines for Springfield, Dayton, Cincinnati and other large cities. Another decided novelty credited to the genius of Mr. Owen is an Olds railroad inspection car fitted up with a covered top and serving as a special distributing car for the Dayton Journal, an enterprising newspaper. Dayton has nine traction lines radiating in all directions and the car makes a circuit of a large number of towns every day delivering bundles of papers. It has a speed of 40 miles an hour and keeps on the schedules of the high speed traction cars of that district. It takes the place of automobiles used for this purpose, which, while most satisfactory while the roads were in good condition, were apt to delay things during muddy weather. If this car proves satisfactory others will be purchased. In general lines it follows the construction of the Olds railroad inspection car brought out some years ago.



DAIMLER MILITARY WAGON WITH FOUR-WHEEL DRIVE MANEUVERING AND DOING ROAD WORK

Digitized by Google

COMMERCIAL STEPPING STONES

HOSE WAGON MADE FOR THE TORRENT HOSE CO., OF ITHACA, N. Y.

Epworth League Scheme—An automobile stage line is to be run between Corpus Christie, Tex., and the Epworth League camp. The line will probably be in operation by early spring.

Sees a Good Thing—O. L. Mead, of Monroe, Mich., is going to start an automobile service between Ann Arbor and Saline. Accommodation for twenty-two is provided and four trips per day will be made. The motor line is specially suitable in that neither steam nor electric lines connect the places.

Quick and Speedy—Hipps' Parcel Delivery is the name of a new institution which has recently started business in Cleveland, O. As its name implies, it will deliver packages throughout the city, using for the work several gasoline delivery wagons recently fitted up. Rates are moderate and the service is speedy and reliable, so it looks like a winning proposition for the energetic promoters.

Praises Automobile—Charles E. Ladd, superintendent of public parks of Springfield, Mass., uses an automobile in making all of his daily inspections of the parks and boulevards in and around the city. In speaking of the merits of the automobile for such work he says: "In September, 1902, I purchased a Knox single-cylinder runabout. Since that time I have used it summer and winter, through rain and shine, except when the ground has been deeply covered with snow. About March 1 of this year I placed an odometer on my machine, which shows that I have run more than 10,000 miles this season. I do not feel that it is an extravagant statement to make that this machine has been driven more than 40,000 miles during the past 3 years. The simplicity, reliability and durability, together with the reasonable cost of maintaining the automobile, places it, in my opinion, second to no machine on the market. I have had the cylinder rebored but once and, so far as I can see, it runs as well as when I purchased it and is, evidently, good for many years' service. As to the actual cost of running the machine, I find that I go from 18 to 23 miles on a gallon of gasoline and use 1 quart of oil to every 175 miles. My experience with tires has probably been about the same as that of other owners of automobiles. I consider the average distance that a tire can be run to be from 6,000 to 7,000 miles, although I have recently taken off a tire that has been run 10,000 miles."

They Beat the Band—Lyon & Healy, pioneer music dealers of Chicago, Ill., who have recently started using three Knox wagons for delivering pianos in and around the city, have placed an order for three more wagons of the same make. This firm has for several years hired teams for its delivery work and since the expiration of the contract for this work has commenced its own delivery system, using horses and automobiles. So far the preference is for automobiles, which are making much better time and doing all-round more satisfactory work than their rivals, the horse-drawn vehicles.

Fire Hose Wagon—The Neustadt Automobile & Supply Co., of St. Louis, Mo., has recently manufactured for the Torrent Hose Co., an Ithaca, N. Y., concern, a fire hose wagon built after Neustadt design. The wagon gear part is of exclusive Neustadt design, the 22-horsepower motor is manufactured by an outside concern, however, and consists of a pair of horizontal cylinders of standard lines, coupled up with a planetary gear box with final drive to a differential countershaft, placed crosswise in front of the rear axle, and connected by two side chains with the rear wheels. The running gear is in strict conformance with present methods, including steel frame work, long, half-elliptic springs and artillery wheels with 3-inch solid tires. On the front beneath the footboard is a finned tube radiator for cooling the motor cylinders. Nobody could mistake the body as being designed for anything else but fire department work, it being fitted with low steel sides and heavy brass railing, nickel-plated, with regulation cross step at the rear and brass uprights at either side. The driver's seat is a double cross one in front, upholstered, and around the right of it are such operating parts as vertical steering column, change speed parts, brake levers and throttle and spark control levers. The wagon load is 2,000 pounds of rubber hose, four men and the driver.

Tribune in Line—The Tribune, one of the most enterprising daily papers in Oakland, Cal., has installed the first of a fleet of motor delivery wagons that will soon be used exclusively in distributing the Tribune throughout the city, suburbs and near by places. The Tribune hopes to complete its entire city delivery within ¾ hour after the last copies are off the press. The wagons are typical gasoline machines with forward bonnet and radiator and drive through a propellor shaft. The carrying compartments are of delivery design, with rear entrances and curved canopy over the driver. The use of automobiles for newspaper delivery is rapidly gaining ground in many large cities where competition is keen and early delivery means larger sales. This is particularly the case where several editions are published daily.

Nothing Doing?—The Union Transportation Co., the title of the company organized by the colored people of Nashville, Tenn., to thwart the successful operation of the Jim Crow law as passed by the last legislature and which became effective on July 5, seems to have dropped out of the affairs of the motor world. After an unsuccessful attempt to operate four second-hand cars that were purchased from New York dealers, the company declared the machines of no use and sent a representative to St. Louis, where it was stated that no expense would be spared to start the venture on a paying basis. At the time of the departure of the company's representative it was given out that nine cars were to be bought and used in the transportation business. The cars have not arrived and it is believed that the company has gone out of business. Many more negroes are riding on the street cars than heretofore and by the reports of the street car company for last month it was shown to have been a banner month in the transportation department, the colored folk preferring to ride in the trolleys.

WATER COMMISSIONER IN SPRINGFIELD, MASS., USES KNOX CAR

Digitized by Google

Among Makers and Dealers

GARAGE OF JOPLIN AUTOMOBILE CO., AT JOPLIN, MO.

Hawaiian Representation—The control of Hawaii territory for Winton cars has been given to the Pioneer Automobile Co., of San Francisco.

One in the South—Jacksonville, Fla., now boasts an automobile factory, conducted by M. C. Hutto, formerly manager of the East Coast Automobile Co. The model he is making is a 24-horsepower four-cylinder car.

Place Fiat Agencies—Hollander & Tangeman, of New York, have placed Fiat agencies with the Harry Fosdick Co., of Boston, for New England, and the Rochester Automobile Co. Negotiations are in progress for a Chicago agency. Agents are to be appointed in the leading cities.

Nails Typewriter Rumor—The rumor has been persistent that the Smith Premier Typewriter Co., of Syracuse, N. Y., would soon enter into the business of manufacturing automobiles, but the rumor has been denied by the officials of that company. Alexander T. Brown, one of the heaviest stockholders in the H. H. Franklin company, is vice-president of the Smith Premier Typewriter Co.

New Chicago Maker—Chicago has another automobile factory, though at present it is on a small scale. Torgerson & Hansen, 228 One Hundred and Eleventh street, Roseland, are finishing their first sample, which is a single-cylinder runabout. The motor is of the horizontal pattern. The firm has not decided at what price the car will be marketed, but hopes to put it out to sell at a figure which will suit the pocketbooks of the class of people interested.

Seeks Factory Site—The Forest City Motor Car Co., a company formed at Cleveland a short time ago by W. Stone, U. G. Smith, C. H. Taylor and others, has a proposition before the board of trade of Massillon, O., relative to the location of its plant in that city. At present the company is building cars in a small way, but it has made plans for a factory of considerable size and desires to begin work for next year as soon as possible. The proposition involves the formation of a $100,000 company, the Massillon people to subscribe to $30,000 worth of stock. It looks as though the deal might go through as the people of that little city are hot after new factories.

After Salon Exhibit—Joseph S. Josephs, manager of the Auto Import Co., of New York, sailed on the Kron Prinz Wilhelm on Tuesday, to arrange for the shipment of the Rochet-Schneider Paris salon exhibit for the Madison Square garden show.

Gets Reo Agency—The Reo agency in Washington, D. C., has been secured by L. S. Jullien, formerly with the Cook & Stoddard Co., and he will carry the full Reo line at the garage of the Cahill Automobile Co., on L street, a part of which he has secured.

Going Uptown—The Homan & Schultz Co., New York, agent for the Rambler and the National, will leave the Thirty-fifth street district and join the uptown movement. It will on February 1 take posession of a five-story garage, 50 by 100 feet, which is now in course of construction for this company on West Sixty-second street near Broadway, and between the White and Cadillac garages.

Tips on Portugal—Some details of the import trade in automobiles in Portugal are to hand, from which it is learned that in 1901 twenty cars, valued at $37,915, were imported, eighteen of them coming from France. In 1902 the number had increased to fifty-one, of which thirty-six came from France, five from Germany and the balance from other countries. In 1903 the total automobile imports were valued at $212,531 for 118 cars, of which France furnished eighty, Italy ten, the United States thirteen and Germany three. In 1904 the number of cars imported was 109, valued at $229,265, while in 1905, up to May 31, the number was forty-two, valued at $81,125. The duty on finished automobiles is $120, and on unfinished cars $70. The principal firms engaged in the automobile business in Lisbon are as follows: A. Beauvalet & Commandita, 31 Praca dos Restauradores; Sociedade Portugueza, 4-26 Rua do Jardim do Regedor; F. Street & Co., 156 Rua do Poco dos Negros. In Oporto the principal dealers are: Teixeira & Irmao, Rua da Sa da Bandeira; Empreza Automobilista do Porto, Rua de S. Lazaro; Joao Garrido, Rua de Passos Manoel. All have good garages.

Kelsey Promoted—C. W. Kelsey, former representative of the Maxwell-Briscoe Motor Co., at Philadelphia, is to be the general sales manager of the company with headquarters at Tarrytown, N. Y.

Cutting Signs Lease—General Cutting, New York representative of the Olds Motor Works, attended the meeting of Oldsmobile agents at Lansing last week. Before his departure he signed a lease for a three-story building on West Fifty-first street, for use as an exclusive Oldsmobile garage and repair shop.

Another Merger—Rumors from Pontiac, Mich., have it that a deal is pending by which the Pontiac Buggy Co. will become a part of the Cadillac Automobile Co., of Detroit. It is said that R. F. Monroe, controlling stockholder and manager, proposes to acquire the interest of the other stockholders and then make the merger. It is figured that the increased capacity of the Cadillac plant will be able to use the entire output of the Pontiac company.

Talk Over Selden Suits—The meeting of the A. L. A. M. executive committee, held in New York last Thursday, was devoted mainly to consultation with S. R. Betts, senior counsel, and other Chicago and New York counsel, on the status of the Selden patent suits. The taking of the final testimony of the plaintiff in rebuttal will begin at Rochester next Wednesday. The final arguments will be made in January and the case will then be in the hands of the court for decision.

Austrians Raise Prices—Information comes from Austria that the rubber goods manufacturers in that country have decided to raise the prices on all kinds of rubber goods, tires included, because of the enormous increase in the price of raw material. Goods over the price of 10 kronen will go up 20 per cent, the increase to go into effect at once. In Germany the rubber men protest they cannot longer continue to sell tires and other technical rubber goods at the prevailing prices and an effort is being made to get the larger makers together, the competition being so fierce that they cannot raise the prices in accord with the increase in the price of raw material.

Working 22 Hours Daily—The Anderson & Sons Co., of Detroit, Mich., has just rearranged its working schedule so that its day shift works 10 hours and the night shift 12 hours, so that the factory, notwithstanding the fact that it has been greatly enlarged, is in operation 22 hours in every 24 hours. Of the automobile part of the company's work, Mr. Anderson says: "The automobile manufacturers are placing their orders freely. We are making 6,000 crankshafts for Detroit manufacturers, and are beginning to hesitate about making promises for early deliveries for any more. The business already contracted for next year is equal to this year's entire product. A new grinding machine we are installing to finish crankshaft work will do the work within a quarter of a thousandth of an inch. It is the use of such machines that has made

Digitized by Google

the reputation of American manufacturers, and enabled them to compete with the world, no matter how low wages may be in other countries."

Another German Show—The next annual show of the Automobile Club of Germany will be held during February and is expected to be the largest show ever held in the Fatherland.

Olds People Entertain—Oldsmobile agents from all parts of the country were entertained at the factory last Friday, shown all the fine points of the 1906 models, given a banquet followed by a vaudeville show, and the next day they were all taken over to Ann Arbor to see the Wisconsin-Michigan football game.

Another Big One—Joseph S. Heller, of New York, importer of the Pipe cars, has received from his architect plans for a seven-story and basement garage, shortly to be built by him on upper Broadway, near Sixty-sixth street. Mr. Heller also contemplates the opening of a garage in Brooklyn.

Winton Tour Ends—The trans-continental automobile exposition trip, conducted by Sales Manager Shanks, of the Winton Motor Carriage Co., ended in Stockton, Cal., Friday of last week. The company's new model K was exhibited in twenty-five different cities from coast to coast, the car having been on the road 55 days and having passed through seventeen states and the Dominion of Canada. The route was from New York west through Chicago and St. Paul to San Francisco, and then east through Canada via Canadian Pacific Railroad.

Track in Moline—A circular test track, 22 feet wide and a quarter of a mile in circumference, is being built at Moline, Ill., by the Moline Automobile Co. for testing purposes. The company has added a new model to the two it has been making—a 35-horsepower car. It is said to be counting on turning out 400 machines in 1906.

Crankshaft Orders—The Anderson & Sons Co., a tool manufacturing concern located in Detroit, announces that it has already received orders for 6,000 crankshafts from Detroit automobile manufacturers. For this purpose it is using a new grinding machine which is said to do the work within a quarter of a thousandth part of an inch.

To Make Engines—The Buckeye Gas Engine Co., of Delta, O., was perfected last week, being incorporated under the state laws of Ohio by C. C. Reed, J. M. Longnecker, F. Briggs, C. R. P. Waltz, N. F. Carmon, W. T. Saxton, O. J. Wisman, G. R. Anderson, A. J. Fraker, John Latzer, Byron Yarnell, W. E. Fowler and W. E. Ramsey. The new concern will employ from fifty to 100 men and will manufacture gasoline engines, motor engines and special machinery. The company has purchased the plant of the Underwood Mfg. Co., at Elmore, O., and will move the machinery to Delta. A whole block has been purchased for the erection of the buildings, the first building to be erected to be 108 feet long and 55 feet wide when it is completed.

More for Houpt—The E. R. Thomas Motor Co. has added to the territory of Harry S. Houpt, its New York agent, Fairfield county, Conn., which includes the cities of Bridgeport, Norwalk, Stamford and Danbury. The New York agency territory already includes besides Greater New York all of Long Island and Hudson and Bergen counties in New Jersey.

To Boom Gaulois Tires—The Gaulois tires are to be exploited in this country by the Gaulois Tire Co., a corporation recently formed, subsidiary to the Decauville Automobile Co., of New York. This tire is made at Clermont, Ferrand, France, by Bergougnan & Co. It has never before been introduced in this country. Paul L. Snutsel is the manager of the new concern.

Corbin Trip Over—Manager Bretz, of the Corbin Motor Vehicle Corporation, New Britain, Conn., completed his 2,800-mile business tour in a Corbin car, at Pittsburg. The route followed included the principal cities through the Mohawk valley to Buffalo, thence to Cleveland, Detroit, Chicago, Indianapolis, Cincinnati, Columbus and Pittsburg. Several agencies for the Corbin car cars were closed in each of the states passed through during the tour. The novel method worked well.

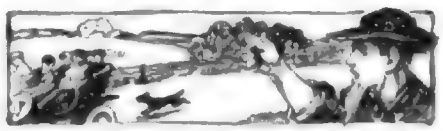
LEGAL LIGHTS AND SIDE LIGHTS

BACKS UP THE MOTORIST

Frederick Coleman, representing the White steamer in England, has just scored a victory in the courts which is hailed with delight by John Bull's leading motorists. His contention that driving above the legal rate of speed on a highway that was deserted at the time did not endanger the public was sustained by Recorder Philbrick, of Essex county, before whom the case came on an appeal. Coleman was arrested and fined for driving at a speed dangerous to the public on the London road, Lexden, near Colchester. He admitted driving at a speed above the legal limit, but denied having driven to the public danger. Convinced that the motoring world was anxious to know if it was possible for an automobile to be driven at a speed exceeding the legal limit and yet not to the public danger, Coleman took an appeal. Before Recorder Philbrick he succeeded in proving that no one was in danger at the time. The counsel for the prosecution pointed that in fixing the legal speed limit of 20 miles an hour the legislature must have arrived at the conclusion that anything above that limit must be dangerous, whether there be any actual danger at the time or not.

CLAIMS A NUISANCE

An injunction suit has been filed against the Haughton Automobile Co., of Washington, D. C., by the Dewey Hotel Co. and others, the claim being made that the company maintains a nuisance in its garage in Stanton court, in the rear of the Dewey hotel. The nuisance complained of consists of "unseemly noises and foul odors"



arising from gasoline cars stored in the company's garage. The case has occasioned a lively discussion among many of the leading motorists in the city who see in such an action trouble ahead in the way of private garages, located on the rear of residential lots.

FARMERS' WISE WORDS

At the thirty-ninth annual session of the National Grange, Patrons of Husbandry, which was held in Atlantic City last week, Worthy Master Aaron Jones, in the opening speech, paid his respects to automobilists who travel the roads at a speed detrimental to the safety and comfort of other road users. He said in part:

"No innovation in modes of travel has caused more general comment than the appearance of automobiles and the consequent disturbance of travel. Accidents of the most shocking nature have been of common occurrence. In some sections of the country travel upon the country roads has been reduced to the driving absolutely necessary, cutting out all pleasure driving. There is no doubt of the right of automobilists to legitimately use the highways, but that use should be regulated by wise laws vigorously enforced and the penalties for their violation should be sufficiently severe to serve as an effectual warning against violations by others. Automobilists should unite with the people in the work."

NOT A HOUSEHOLD EFFECT

The treasury department has been advised of an interesting decision just rendered by the board of general appraisers in the case of John Magee against the collector of customs at New York. Mr. Magee contended that an automobile imported by him should have been admitted free of duty under paragraph 483 of the existing tariff act, as a manufacture of the United States returned, under paragraph 504, as a household effect, or under paragraph 697, as the personal effects of a returning resident of the United States. The collector of customs, in transmitting the protest of Mr. Magee, stated that the automobile in question was of French manufacture, being a 24-horsepower Panhard, which, not being disputed by Magee, made it necessary for the board to overrule the claim to free entry under paragraph 483. The board found from the oath or declaration of the importer that he and his family sailed from the United States on February 7, 1905, and returned on July 4 of the same year. It is apparent that this declaration is inconsistent with any right to free admission under paragraph 504, which provides that the article in question must have been actually used abroad by the importer for not less than 1 year. Paragraph 697 limits the right of free entry of articles purchased abroad by residents of the United States to a value of not more than $100 upon complying with the regulations of the treasury department. These facts left Mr. Magee with not a leg to stand upon, and his protest was therefore overruled by the board of general appraisers in New York.

Digitized by Google

ROADSIDE TROUBLES

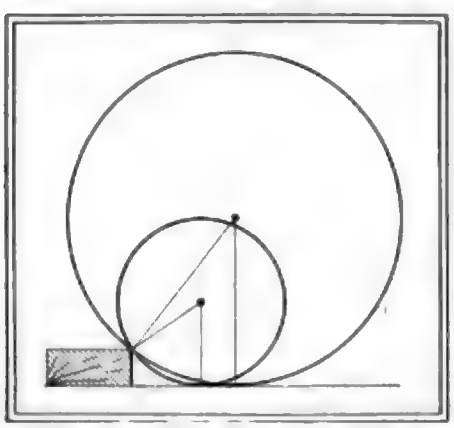
An Ounce of Prevention

Copyrighted by the American Motor League

By Chas. E. Duryea

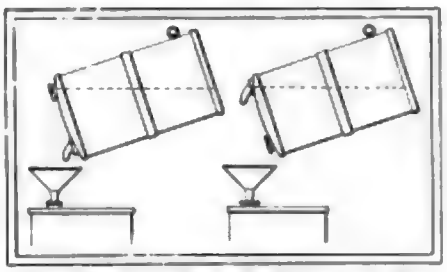
POURING OIL—Some one has said: "Our life is made up of little things," and it is certainly true that knowing the difference between right and wrong ways of doing even little things goes far to make or mar the pleasure of using a motor vehicle. It would seem that everyone knows how to empty the contents of an ordinary tin can, but such is far from the truth. The opening is usually in one corner and it seems natural to turn this corner down for the purpose of pouring. If the can is full the contents run down the outside and, as air bubbles enter at irregular intervals, the flow is irregular, so that it is impossible to pour steadily or into a small opening. If, however, the can is turned over, bringing the opening at the highest point, the difference in result is almost magical. The liquid flows steadily, can be poured as slowly or rapidly as desired and the danger of spilling is very largely reduced. The condition holds true unless the can is almost empty, when, of course, it should be turned with the opening at the bottom. The illustrations show the matter quite clearly. With a little practice one can fill tanks and oil cups without a funnel, which is not only decidedly convenient at times, but in connection with heavy oil, avoids the use and the necessity of cleaning the funnel. If not cleaned, the heavy oil gathers dirt, which goes into the oiler at the next filling, for which reason, if for no other, the use of a funnel should be avoided. When a funnel is necessary a sheet of paper rolled into a horn and held with a common pin makes a very satisfactory one, and can be thrown away after using. It will even serve very satisfactorily for use with water.

A tin pail with a wire around the edge is better to pour from than a wooden one, for the water will not run over the edge and down the outside of the pail so easily. A tin can or pail with or without a bail, fitting outside the lubricating oil can requires no additional space and is frequently handy for water, washing hands, carrying gasoline, etc.



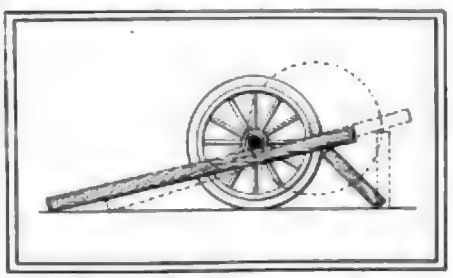
ILLUSTRATING LARGE WHEEL ADVANTAGE

Care of Hands—Caring for an automobile is dirty work and how to clean one's hands is a question of importance. If the skin is soft and smooth, the dirt and oil do not enter the surface and are readily removed with soap, but if hard and rough,



WRONG WAY AND RIGHT WAY TO POUR OIL

the situation is different. A few drops of glycerine, diluted with an equal or greater part of water, well rubbed into the hands each evening will keep them soft and smooth and without the disagreeable redness and unpleasant feeling caused by pure glycerine. Glycerine has a great affinity for water and not only spreads with difficulty, which prevents it from reaching the crevices where it is needed, but it withdraws the moisture from the skin and tends to inflame it. Dilution with water prevents this and makes it a very agreeable dressing, superior to most, for chapped hands and faces.

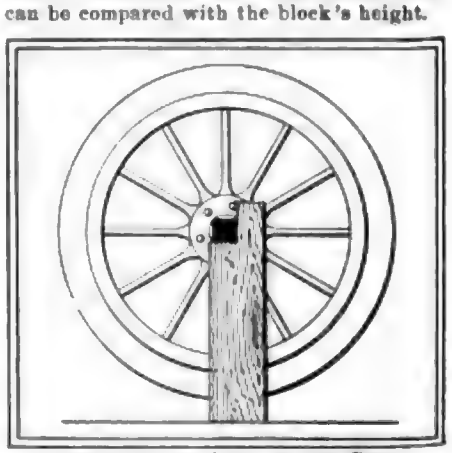


GOOD SCHEME FOR A TEMPORARY REPAIR

Before taking up a dirty job, if one will soap the hands well with a toilet soap, the crevices will be filled, largely keeping out the dirt, and since the soap dissolves readily, the hands are readily cleaned. Washing the hands with thin oil will frequently remove the dirt, without making the hands rough, as is the tendency of gasoline or kerosene. Strong soaps remove the dirt, but are likely to roughen the skin. Abrasive soaps, like Sapolio, are considered better by many people. Rough corn meal or saw dust frequently serves nicely. Pine sawdust, moistened by turpentine, followed by a good lather, is recommended. Ammonia is unpleasant to use, but it has a tendency to convert the oil into soap, thus rendering it soluble and is, therefore, favored by some.

Cuffs—The average man would take the stitch in time that saves nine more frequently if he was not afraid of soiling his cuffs. An automobile is a dirty machine at best, and with most makes it is not easy to make adjustments without preparing for the work by donning overalls and blouse, or, at least, removing coat and cuffs. This the average driver does not like to do, unless absolutely necessary, so he keeps going, trusting that nothing will happen of serious import before he reaches his destination. If, on the other hand, he could make the adjustment with little trouble, he would most likely do it and prevent greater trouble. Cuffs serve to keep one's coat sleeves clean, as well as for ornamentation, but they lose their value for these purposes if they are handled by the soiled fingers which usually result from tinkering an automobile. If, however, they are fastened to the inside of the coat sleeves, instead of to the shirt sleeves, they may be removed readily with the coat and without handling. They can be so fastened by most forms of cuff holders and many up-to-date tailors attach a button to the inside of the coat sleeve, at the proper distance from the end to hold the cuff, so that it projects just the right amount, no more and no less. This arrangement is most satisfactory for daily use and at the first sign of trouble, the cuffs and coat go off together, leaving the man free to make any reasonable adjustment. After one has worn cuffs attached in this manner, he will wonder why he ever used any other.

Emergency jacks for raising the car wheels when accidents occur on rural roads are such as environments permit. One time a rail from a fence with a block or stick of stove wood for a fulcrum does the work, the rail and block being as shown in heavy lines, when the car is slightly pushed ahead, until the fulcrum is vertical and the wheel raised from the ground. A vertical block with shoulder on the end can then be placed as shown. Large road wheels have a great advantage over smaller ones in passing over road obstacles, as is shown in the illustration. The wheels' radii can be compared with the block's height.



QUICKLY MADE JACK FOR THE ROAD

EDITOR'S NOTE — This is the nineteenth and last of a series of articles by Charles E. Duryea. These articles will be prepared for publication in book form and will be distributed by the American Motor League to its members during the coming year.

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Chagrin Falls, O.—The stables and garage of F. H. Townsend, recently destroyed by fire, are to be rebuilt.

Nashville, Tenn.—A new garage is to be opened in the building on Third avenue, north, formerly occupied by the Huber Mfg. Co.

Auburn, Ind.—The Model Gas Engine Works will remove from this city to Peru, where new buildings have already been commenced for the company.

Providence, R. I.—The Shepard company has secured the Columbia line electric and gasoline for Providence. The business has been previously handled by the Davis Co.

Long Island City, N. Y.—Mohler & DeGross, manufacturers of gasoline and gas engines, announce the sale of their plant to F. A. Seitz, who will carry on the business under the old name.

New Haven, Conn.—Efforts have been made to organize a company with a capital stock of $50,000, to manufacture automobiles fitted with a new engine designed by F. C. Billings, of Billings & Spencer.

Cleveland, O.—T. C. Whitcomb is enlarging his establishment on Erie street, near Huron. The coming season he will handle the Rambler, Premier and Maxwell lines and may take on a high-powered car.

Utica, N. Y.—The Wolcott property on Bleecker street, lately purchased by J. Abrams, will probably be the site of the garage to be erected by the Utica Motor Car Co., which was recently organized. The lot extends from Bleecker to Jay streets.

Boston, Mass.—Frank W. Sanborn, of Concord, N. H., will handle the Thomas Flyer for 1906, and the Maine Motor Carriage Co., of Portland, Me., will represent that car throughout its state, C. S. Henshaw, the New England agent, having closed with them recently.

Cincinnati, O.—A new automobile garage has been opened. R. C. Crowthers has leased from D. H. Jenike the property at 130 East Ninth street, near Main, and will represent some outside concerns which for some time have desired to secure a Cincinnati agency for pleasure vehicles, trucks and other motor conveyances.

Boston, Mass.—George H. Lowe, former manager of the White Sewing Machine Co., has identified himself with the Wayne company of New England. Mr. Lowe will have a third interest in the company, and at the coming meeting will be elected vice-president. The office of the company will remain at 509 Tremont street.

Richmond, Va.—The Richmond Mfg. Co. has been organized to take over the entire output and business of the Southern Machine Mfg. Co. The company, while making a specialty of gas, kerosene and gasoline engines, will also do a general foundry and machine business. Among those interested in the new venture are Edgar Allen, Jr., who has been elected president of the company; Abner C. Goode, W. B. DePoy and J. G. Snyder.

Troy, N. Y.—The Troy Automobile Exchange has opened a branch for the sale of Wintons in Schenectady, N. Y.

Worcester, Mass.—Harrington Auto Station No. 1 has renewed its contract with the Electric Vehicle Co. for Columbia cars in Worcester county for 1906.

Nashville, Tenn.—The Southern Automobile Co. has closed a deal with the authorities of Vanderbilt university for a 5-year lease on the Broad Street Amusement Hall property and is preparing to build.

Lynn, Mass.—A new punctureless tire is being manufactured by W. J. & J. R. Mitchell and will be known as the Mitchell punctureless tire. This tire combines the principles of the pneumatic and the cushion tire.

Cleveland, O.—The new establishment of the Price Brothers Carriage Co. will be complete in every detail, embracing four floors and basement, 40 by 200. Baker electric vehicles will be handled exclusively.

Bath, N. Y.—The Kirkham Motor Co., which was organized several months ago to carry on the manufacture of motors for automobiles, has decided to enlarge its plant with a view to an increased output. A committee has been formed to consider and advise upon an increase of the capital stock.

LATE INCORPORATIONS

New York City—The Olborah Co. has been incorporated with a capital stock of $3,000.

Cleveland, O.—The Motor Car Supply Co. has filed articles of incorporation with a capital stock of $10,000.

Wilkesbarre, Pa.—The Matheson Motor Car Co. has been incorporated with a capital stock of $1,100,000.

Chicago—The Kelley-Hunter Co. has been incorporated with a capital stock of $15,000 to engage in the sale of automobiles.

Marmaroneck, N. Y.—The Suburban Automobile and Garage Co. has been incorporated with a capital stock of $25,000.

Cleveland, O.—Among recent incorporations at Columbus was the Paxon Motor Co., of this city, with a capital stock of $10,000.

Worcester, Mass.—Incorporation papers of the Worcester Automobile Club have been passed with a charter list of 125 members.

Portland, Me.—The Adams-Sutton Motor Co. has been incorporated to deal in motor vehicles. The capital stock is $40,000; nothing paid in; par value $100.

New York City—The McGlehan Mfg. Co. has been incorporated with a capital stock of $20,000. The company will manufacture odometer and automobile supplies.

Hartford, Conn.—The Evarts Machine Co. has filed a certificate of incorporation with a capital stock of $25,000. It will manufacture and deal in machinery, especially engines and motors.

Charlotte, Mich.—The Dolson Automobile Co. has been incorporated with a capital stock of $100,000, taking over the business of John Dolson & Sons. The carriage business has been closed out and hereafter automobiles only will be made.

Buffalo, N. Y.—A certificate of incorporation has been filed for the E. R. Thomas Realty Co. with a capital stock of $1,000. The company will conduct a garage and was formed to take over the title of the property in New York city at Sixty-third street and Broadway recently purchased.

Seattle, Wash.—The Broadway Automobile Co., Winton agent in Seattle, will open a branch house in Portland, Ore.

New Britain, Conn.—F. A. Law, of Hartford, is the assignor to the Electric Vehicle Co. of a patent for a steering axle for vehicles.

Pittsburg, Pa.—The Central Automobile Co., which was lately organized by Edward G. Mooney and Edward Seely, has leased the George McNulty livery stable.

Detroit, Mich.—A new plant is in course of construction at 18 Piquette avenue for the North Woodward Garage Co. It is to be a two-story fireproof building.

Pittsburg, Pa.—The Central Automobile Co., which was recently organized by Edward G. Mooney, has leased the George McNulty livery stable and awarded a contract for alterations.

Denver, Col.—Business has been so good with the Folker Automobile Co., at 1535 Tremont street, that it has been forced to buy the adjoining property, which will be remodeled into a garage.

Buffalo, N. Y.—The Kane-Champlin Co. has closed with the Reo company for the exclusive representation of its cars in Buffalo and vicinity. It will occupy rooms at the corner of Elliott and Tupper streets.

Milwaukee, Wis.—A second story will be put on the garage of Thomas B. Jeffery & Co. It will cost $9,000 and the space will be used for the storage of automobiles, the cars being carried up by an elevator.

Albany, N. Y.—Instead of building a garage on Pine street, the Albany Garage Co. has bought the property at 28-30 Howard street, with a frontage of 68 feet and an area of 4,800 square feet. It will erect a four-story structure.

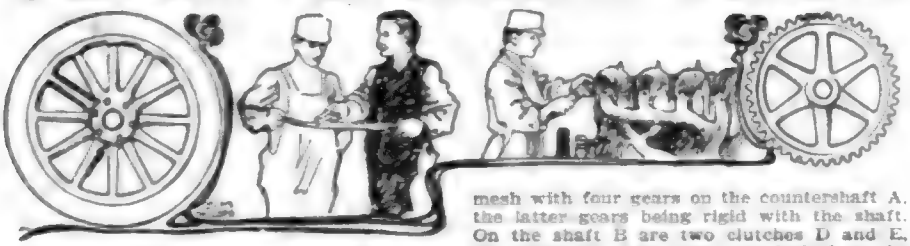
Hartford, Conn.—The Capitol Foundry Co., manufacturer of automobiles, marine and stationary engine castings, has established its plant here and will be under the personal supervision of F. W. Stickle, president and general manager of the company and formerly superintendent of the Manufacturers' Foundry Co., of Waterbury.

Cleveland, O.—The Peerless Motor Car Co. last week exercised the option on some 5 acres of property on which its plants are located and took over the acreage, which is held under 99-year lease. The new buildings which the company is erecting are nearly completed and are partly occupied. It is understood that the company has plans for two more additions in the spring.

New York City—The Correspondence School of Automobile Engineering, formerly located at Akron, O., has moved to the Flatiron building, New York. The school has been reorganized on a more substantial basis than ever, and now is incorporated under the laws of the state of New York, with a capital of $30,000. R. E. Olds has succeeded A. J. Saalfield as president; R. M. Owen has become treasurer in place of E. R. Adam, and Robert H. Montgomery is secretary, instead of G. S. Rowe. Victor Lougheed will continue as vice-president and general manager.

Digitized by Google

Current Automobile Patents

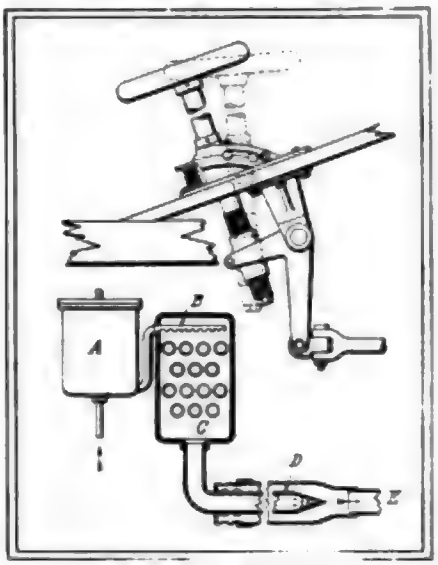


Tilting Steering Wheel—No. 804,375, dated November 14; to Herbert H. Buffum, Abington, Mass.—The tilting steering gear referred to in this patent has the ordinary steering wheel with a long screw on the bottom of the column, enclosing which is a nut moved up and down when the steering wheel is turned to the right or left. Pivoted to the nut is a bell crank with its fulcrum bracketed to the under surface of the foot board and the other end of the bell crank connected with a rod running to the tie rod which unites the steering knuckles. For tilting purposes a quadrant is bolted to the upper surface of the foot board, and in this is a plain slot with a semi-circular notch at either end. In this slot works a pin inserted in the steering column and on the upper end of the quadrant is a coil spring pressing upward, so that when the steering gear is in its working position the pin rests in the notch of the slot closest to the driver. To put it in its tilted position the end of the quadrant is depressed by foot pressure so that the pin leaves the notch, when the wheel can be tilted forward through the slot and lodged in the notch at the forward end, where it is retained by the spring tension upon the removal of the foot from the quadrant.

Oil Carbureter—No. 804,589, dated November 14; to Giovanni Enrico, Turin, Italy—The inventor has a carbureter for using heavy oil, the object of the device being for the operation of commercial trucks, using this fluid for fuel. Where heavy oil is used the volatilising requires additional heat, which the inventor obtains by a series of pipes in the vaporizing chamber C. Through these pipes flows hot exhaust from the muffler pipe. The flow of oil is regulated by a float within the chamber A, oil passing as needed to the chamber C through the pipe B, which has a serrated opening in the top of the vaporizing chamber. Oil entering by this pipe falls around the heating tubes and is vaporized. Being drawn downward through the pipe D by motor suction it is sprayed through a nozzle at the end of this pipe, where it mixes with air and passes by way of the piping E to the cylinders.

Individual Clutch Gear Box—No. 804,212, dated November 14; to William R. Cary, Milwaukee, Wis.—This invention is an individual clutch gear box for giving different speeds in automobiles. On the main shaft B are loosely mounted four gears in constant mesh with four gears on the countershaft A, the latter gears being rigid with the shaft. On the shaft B are two clutches D and E, by which the four gears are locked to the shaft. Each gear is made with a wide overlapping rim, so that the clutch has sufficient expanding surface to work on the gears at either side of it. The expanding device is a friction ring expanded by a V-shaped block, operated through the central rod C within the hollow shaft B. The expanding of any one of the two clutches is through a lever with pinion working in a rack on the rod C.

BUFFUM'S STEERING WHEEL



ENRICO'S OIL CARBURETER

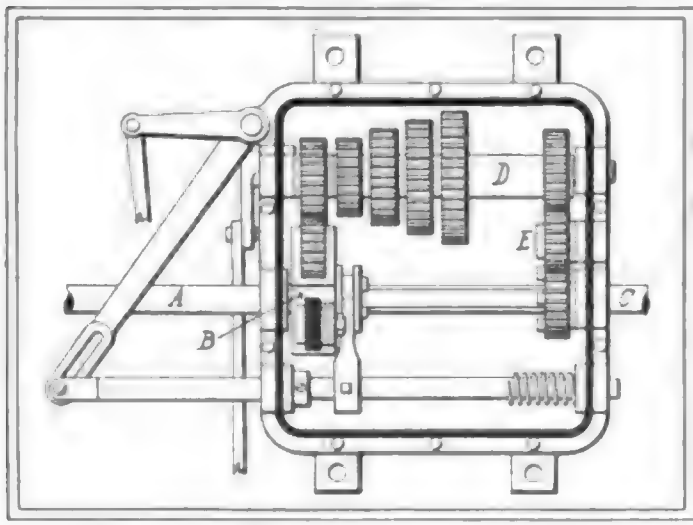
Change Speed Gear—No. 804,740, dated November 14; to Columbus K. Lassiter, Schenectady, N. Y.—In this transmission gear the main shaft A extends into the rear of the case and has its end bearing within the shaft C. On shaft A is a sliding gear B, which is eccentrically mounted on the shaft, so that the gear can be meshed with any of the five different gears on the countershaft D, the drive in each case being from the gear B to the countershaft gears and then back again to the shaft C through the intermediate gear E. For direct drive the gear B locks with the gear on the end of the shaft C by means of dental face teeth. The turning the gear B on its eccentric bearing is automatically accomplished as the gear is moved into mesh with any of the countershaft gears, so that the action of changing speed is as simple as in any sliding gear.

Multi-tube Tire—No. 804,613, dated November 14; to Frank A. Magowan, Trenton, N. J.—A novelty is presented in this patent in that the pneumatic tire described has an outer tube of the hose-pipe variety, not being split longitudinally between the flanges. Within it is a nest of three air chambers, one within the other, each in turn connected with three separate valves, the valve stems forming a similar nest one within the other. When the tire is first put on the outer air chamber is inflated, leaving the two inner ones resting against that part of the tire adjacent to the rim. In case this tube is punctured the second air chamber is inflated. When the second is punctured the third is brought into service, but with all three punctured repairs must be made.

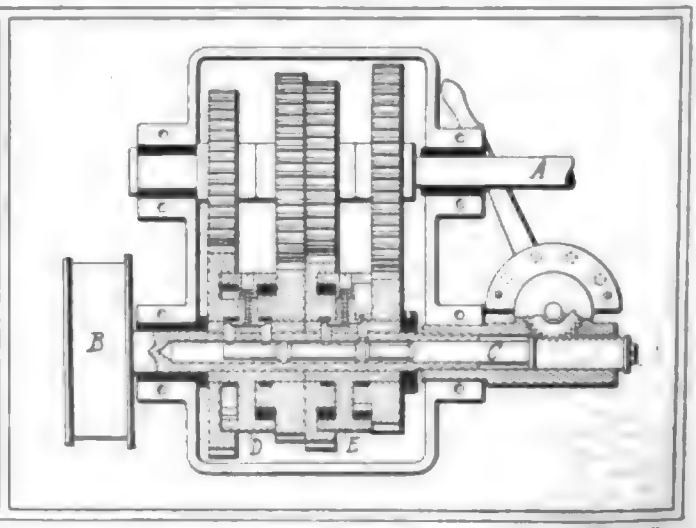
Semi-Pneumatic Tire—No. 804,772, dated November 14; to Franklin G. Saylor, Franklin, Mass.—This tire has an oval-shaped cross section with a slightly U-shaped air tube adjacent to the rim, the concaved part of the tube being next to the tread of the tire, but between the tube and the trend is a large core piece made of rubber-coated yarn wound and twisted together. The yarn is a resilient core and also acts as a protector, so that the air tube cannot be punctured.

Soft Core Tire—No. 804,369, dated November 14; to William F. Beasley, Plymouth, N. C.—Take a cross section of the ordinary solid rubber tire and cut an oblong opening midway of the tread and base and extending nearly to either side, and in this opening place rubber braces similar to two W's placed end to end, the height of the W's being equal to the height of the opening and the length equal to the opening, so that they form a resilient core, and one has the cross section of this tire. The same inventor has a previously numbered patent for a semi-pneumatic tire in which in the outer casing are four concentric tubes with a circular air chamber, half of which is filled by a soft rubber core, the other half being filled with air.

Many-tube Tire—No. 804,701, dated November 14; to Olin M. Bigger, Holt, Cal.—This tire with an outer casing held in place by ordinary clincher rims represents another attempt to produce a puncture-proof tire, or at least one in which, should one puncture occur, the entire air supply is not lost. Within the outer casing are six small inner tubes lying side by side, each with a separate valve. Connecting the six separate valves is a six-branch pipe with one valve at the common part of the pipe, so that to this part an air pump can be attached and the air will pass this valve and through the other valves into each of the separate air tubes. Should one of the air tubes become punctured, five remain intact.



LASSITER'S CHANGE SPEED GEAR



CARY'S INDIVIDUAL CLUTCH GEAR BOX

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.

CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.

JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.

FRANK A. EGAN, Secretary, 152 Nassau St., New York.

FREDERICK B. HILL, Treasurer, 20 Hanford St., Boston.

National Headquarters Vanderbilt Building, New York

THIS LEAGUE

Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

OFFICIAL STATIONS

The league is now appointing official stations in all the various cities and towns which contain a substantial number of motor car users, or which are found on lines of popular tours. It is the aim of the league to bestow this official appointment upon only responsible concerns, where repairs, supplies, storage, charging, etc., can be had at fair prices, and when a dealer is found whose methods and prices are beyond complaint his name and address should be sent to the secretary. His business should be encouraged. The list of official stations will be published in convenient form for the use of league members and a list will be sent to each member and to many other motor car users within the next few weeks.

THE OTHER KIND

The league is also making a list of those proprietors who make a victim of every tourist and resort to all kinds of dishonest methods to compel him to empty his pocketbook in the settlement of fraudulent and fictitious charges. The number of these frugal buzzards is becoming smaller from month to month, but they are still to be found in every state, and if reports are correct some of them play their game behind the sign boards of pretentious establishments. If the reader has been plucked by one of these pirates, who has charged him the fivefold price for supplies or repairs, let him not hesitate to send the name and address of the offender, with full particulars, to "Secretary American Motor League, Vanderbilt building, New York city." The name of the person sending such information will in no case be disclosed, but investigation will be made and the information kept for the use of other tourists, who may thus escape a similar experience.

STATION APPOINTMENTS

The following information relates to the appointment of official stations, and is printed in response to many letters of inquiry:

1—The American Motor League is a national body made up of owners and users of motor cars. It has members in over 700 cities and towns and is the largest organized body of automobilists in the world. Its purpose is to supply its members and others with road books and tour books, maps and other printed information and with lists of the best and most reliable stations, where supplies and repairs can be obtained. Stations properly recommended are entitled to official appointment and these appointments are made from time to time as the growth of the league requires.

2—Each official station is supplied with an official certificate which must be framed and hung in the office or other conspicuous place in the official station. An enameled sign is also supplied, bearing the official league emblem, and this should be put in a conspicuous place either inside or outside the station, as the proprietor prefers. Appointments of official stations are announced in the official organ of the league—MOTOR AGE—and in all road books, tour books and station lists issued by the league for the use of its members. Official stations are also listed for the use of its touring members who ask for information on special routes.

3—All official appointments are permanent. A station appointment is not terminated unless the proprietor violates the official contract. The appointment is therefore a very valuable one and will become more so from year to year.

4—Under the official contract each league member is entitled to a discount of 10 per cent on all bills amounting to $1 and upwards when dealing with the proprietor of an official station. But this discount is never allowed unless the member claiming the same exhibits to the proprietor an unexpired A. M. L. membership ticket.

5—To partially cover the cost of station signs, certificates, correspondence, extra paging in road books from year to year and office expenses entailed in the maintenance of a station department, each proprietor receiving the appointment is required to pay a nominal fee of $10 therefor. The proprietor may, if he prefers, send the sum of $5 as an advanced payment on account; but he will thereafter be required to pay the sum of $2 annually for a period of five years, making a total of $15 in all.

6—Blank applications for appointments of official stations will be sent by the secretary on request, but no applications will be acted upon until officially approved.

PRINTING FOR STATIONS

Designs are being prepared for a handsome form of letterhead, envelope and business cards to be used by proprietors of A. M. L. official stations, and in a few days the secretary will lay before these proprietors a very attractive proposition, by the acceptance of which they can obtain their stationery at a very low price. It is the object of the league to send as many patrons as possible to these official stations, and it is proposed, at the same time, to so enlist the proprietors and managers of these stations in the work of the league that the exchange of benefits will be fully realized on both sides. Many of these proprietors added their names to the membership list and others are doing so from week to week.

DANGER SIGNS

The secretary is still sending out danger sign stencils and the league will be glad to supply these to any motor car user, whether league member or not, who will undertake to put up a danger sign or two at any point or points where they are urgently needed. The secretary will send at the same time full printed directions for making and putting up these signs. The cost is very slight and the benefit is likely to be incalculable. In many parts of the country the approach to dangerous railroad crossings should be marked by these signs; in other places the roads are skirted by deep ditches and dangerous gulleys, often approached by sudden turns, so that a tourist, unwarned by the friendly sign, is placed in a condition of extreme peril before he is aware of it. Many lives might have been saved and painful, dangerous and expensive accidents averted, had these signs been used more generally within the last 3 years.

GOOD ROADS

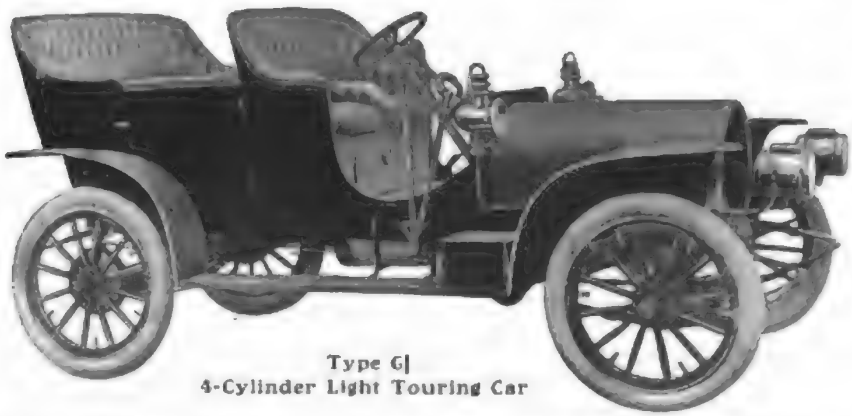
The league is about to send out a little book on the practicable improvement of country roads. It is the second of the series and is a companion volume to the little book on "Macadam Roads," of which an edition of 5,000 copies was sent out last year. "Country Roads" is a convenient little book of sixty-four pages, fully illustrated, and will do much to educate the people in the practical ways of improving country roads.

LEAGUE MEMBERSHIP

There is no initiation fee. The dues are nominal—$2 a year for each member. The membership roll is open to all automobilists of good character and to all who believe in the development of automobiling. It is such people that the league is desirous of securing for members and every effort is being made in this direction. The secretary will send full printed information on receipt of postal card request. Address American Motor League, Vanderbuilt building, New York city.

Digitized by Google

FRANKLIN



Type G
4-Cylinder Light Touring Car

Air-cooled. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Side doors. 88-inch wheel base. 4 or 5 passengers. 35 miles an hour. 12 "Franklin horse-power." 1400 pounds.
$1800 f. o. b. Syracuse. Full head- and tail-light equipment.

A Talk to Franklin Dealers

How are we to sell a 12 "Franklin horse-power" car for $1800 when people can buy for $1700 a car rated at 20 horse-power?

The answer is: Forget power rating. Show what the car will do.

Show that our car does all the other one does and more, and that ours does it easier and cheaper.

Show that power-rating taken by itself means nothing at all. It is only a name.

What does a man care whether his car is named Jenny or Susy, so long as it does the work?

What will the car do? That's the whole question. Stick to that.

You know and we know that our $1800 G car does more than any other car at anywhere near the price. That it does more than the average $2500 car. That it carries as many passengers and carries them faster, safer and more comfortably.

We both know that there are cars costing $3,000, and rated at all kinds of power, that cannot keep up with our G car, particularly on hills, and that haven't strength and durability.

How can we make these facts plain to others?

This is how:—Tell the truth; but tell the *whole* truth.

State only facts; but state them **all.**

If you say to a customer that a Franklin Car is only 12 "horse-power," you do not tell all the truth.

You should tell him that it is 12 "**Franklin** horse-power." You should explain exactly how and why 12 "Franklin horse-power" does as much as 20 horse-power in any other car; and more than in most of them.

If you say any less you are cheating yourself. You are doing injustice to the car. You are not giving your customer a square deal.

He wants a car that will do certain things. You can give it to him and save him money. It is up to you to show him this fact so plainly that he can't miss it or doubt it.

You benefit him as truly as yourself.

The "horse-power" myth is rapidly losing its hold on intelligent motorists.

Everybody knows that you can buy 20 cart-horses for less than one "Dan Patch." The difference is what Dan Patch will do.

You can buy a 20 horse-power steam roller for $1500, but it wouldn't make a hill-climber.

Don't talk "horse-power." Don't *think* it.

Think and talk "Franklin horse-power;" and what it will do.

4 Models for 1908 ... Send for the book

H. H. FRANKLIN MFG. CO., Syracuse, N. Y., *M. A. L. A. M.*

Digitized by Google

WINTON

WHY SOME BEARINGS ARE BAD

There is a big difference between bearings that are **ground** to a smooth-as-glass finish and bearings that are merely "machined" and **not** ground.

No. 1 illustrates the surfaces of brass and steel in a **not** ground bearing. First, let us understand that the brass part of a bearing is **never** ground. The steel part **should be**, but often is **not** ground. Notice the ragged looking surfaces! Magnify a **not** ground bearing before it is used and you'll see just such ragged roughness as this.

No. 2 shows what happens after this bearing has been run a while. Brass is **soft** metal; Steel is **hard**. Therefore, the rough edges of the **not** ground steel cut into the brass until all the crevices in the steel are filled with brass. Then that bearing is no longer a Steel-against-Brass bearing, but becomes Brass-against-Brass, **soft** metal against **soft** metal; thereby creating the greatest possible volume of Friction, Heat and Wear. There couldn't be a **worse** bearing. Ask any mechanical engineer.

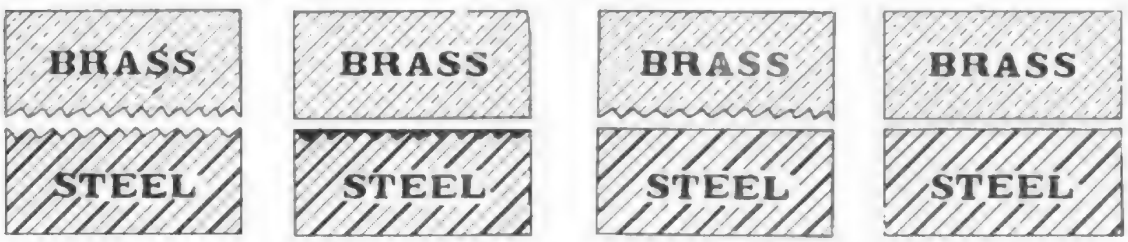
Now let us examine a bearing made of **ground** steel and not-ground brass.

No. 3 shows this bearing before use. Note that the steel is **perfectly smooth** and has no crevices to fill up with brass. But the brass is just as ragged as in No. 1.

No. 4 shows what happens to a **ground** steel bearing when used. The smooth, hard steel does not dig into the brass, but instead presses down the rough spots in the brass until the brass becomes as **perfectly smooth** as the steel itself. Just the way an iron in the laundry smooths out the rough spots in a freshly washed collar and puts a mirror finish on it—with no damage to the iron and a great improvement to the collar.

All steel bearings in the new Winton **Model K** are **ground.** That's why **Model K** glides along without ruinous friction and consumes so marvelously little lubricating oil.

Friction means **wear** and **expense. Avoid** both by using a Winton **Model K.**



THE SMOOTH RUNNING WINTON MODEL K—Four cylinder, vertical, water-cooled. Thirty H. P. or better. Superb Twin Springs. Shooting oiler. Individual clutch transmission. Best of Ignition and Carburization systems. The magnificent Winton Pneumatic Governor. $2,500 f.o.b. Cleveland

The typical American motor car—Americanized Encyclopædia Britannica.

The Winton Motor Carriage Co.

CLEVELAND, O. Member A.L.A.M. **U. S. A.**

CATALOG No. 2 IS READY

Digitized by Google

MITCHELL

"The car you ought to have, at the price you ought to pay."

Our 1906 Line includes the Following Models:

Runabout

Model 2 B, 2-cylinder 8-10 horse-power, vertical motor, mounted in front . . $750

Touring Car

Model 4 B, 4-cylinder 18-20 horse-power $1500

Also a tip top Commercial Line and two new models, the announcement of which at an early date will sensationalize the trade.

We cannot take care of many more new agents, but a few GOOD ones—YES.

WRITE

MITCHELL MOTOR CAR CO.

RACINE, WIS.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION, CHICAGO

Digitized by Google

WHICH WOULD YOU RATHER READ ABOUT?

¶ There has been quite a little discussion going on lately as to whether air-cooled cars do or don't require more cylinder oil than water-cooled cars. We also note with interest the evident pride with which the announcement is made every once in a while, that someone or other carried four passengers a hundred miles for a microscopic fraction of a cent less per passenger per mile than other cars usually cost.

¶ If a customer was to ask us for exact figures as to how much per passenger mile it costs to run the Stevens-Duryea for oil and gasoline, we doubt if there's a man at the factory who would know—we'd have to guess at it, for at the prevailing prices of gasoline and oil, we think life is too short to figure out such hair-splitting economies.

¶ Our guess would be that the Stevens-Duryea will average 15 miles to the gallon of gasoline in the hands of the average owner and a factory expert might do 25 miles to the gallon. The Stevens-Duryea will run 200 or 300 or perhaps 400 miles per gallon of oil. But if the Stevens-Duryea should run 50 miles per gallon of gasoline and some other car but 10 miles per gallon, the saving would be only $40.00 in 5,000 miles, which is a year's riding for most people. And if we use a gallon of 50-cent cylinder oil every 100 miles, or if 'twas only a pint, the saving would amount to only $22.00 in a year.

¶ But let us suggest some good, real, live topics to talk about, like the following:

¶ How much will my tire bill be for 5,000 miles? will it be $5.00, $500.00 or $1,000.00???

¶ How much will my repair bill be for 5,000 miles? will it be $10.00 or $100.00 or $1,000.00???

¶ How much will it cost to overhaul my car after it has run 5,000 miles? will it be $50.00 or $500.00???

¶ How much will my car have depreciated by the end of the year? will I lose $500.000 or $1,000.00 or $2,000.00???

¶ Will the car I buy in 1906 be dropped from the market at the end of the year so that my car will be out of date, and so that I can't get repair parts if I want to run it a second year?

¶ Will my car be just as quiet, just as smooth, just as free from rattle and noise after 5,000 miles as it was when new?

¶ Will it have just as much power?

¶ Now the answers to these questions are not expressed in fractions of cents "per passenger mile." They deal with hundreds or even thousands of big, round dollars—and the man who wants to secure economy that is really worth while, can get accurate, precise, trustworthy information from us as to what the Stevens-Duryea has cost on each of these items. Furthermore, we are not giving you this data about a car that we're going to stop making at the end of the season, but on the car you buy for next year. Other manufacturers who change models every year, can tell you what the car they are abandoning has done,—but this information doesn't do you a particle of good. If you ask for information about the car they expect to sell you, the information you get in reply is based on what about one or two trial cars of the "new" model have done for two or three months in the hands of factory experts. Wouldn't you rather know what 350 have done, in all parts of the United States, in the hands of all sorts of drivers?

Next Week We Will Tell You

J. STEVENS ARMS & TOOL CO.

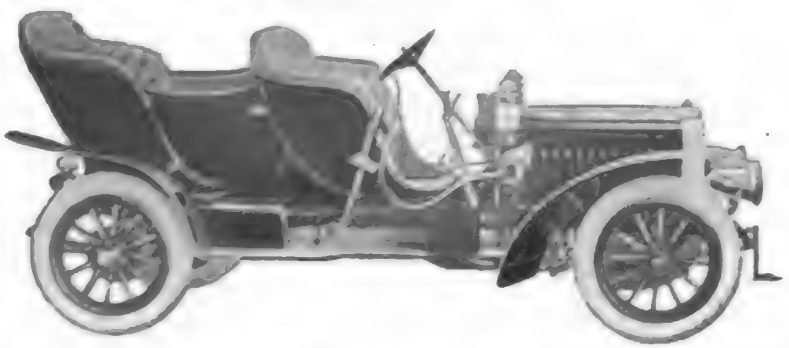
Makers of the Twentieth Century Hustler

705 Main Street, CHICOPEE FALLS, MASS.

Members Association Licensed Automobile Manufacturers

Digitized by Google

The Queen



One of Our Three New Models

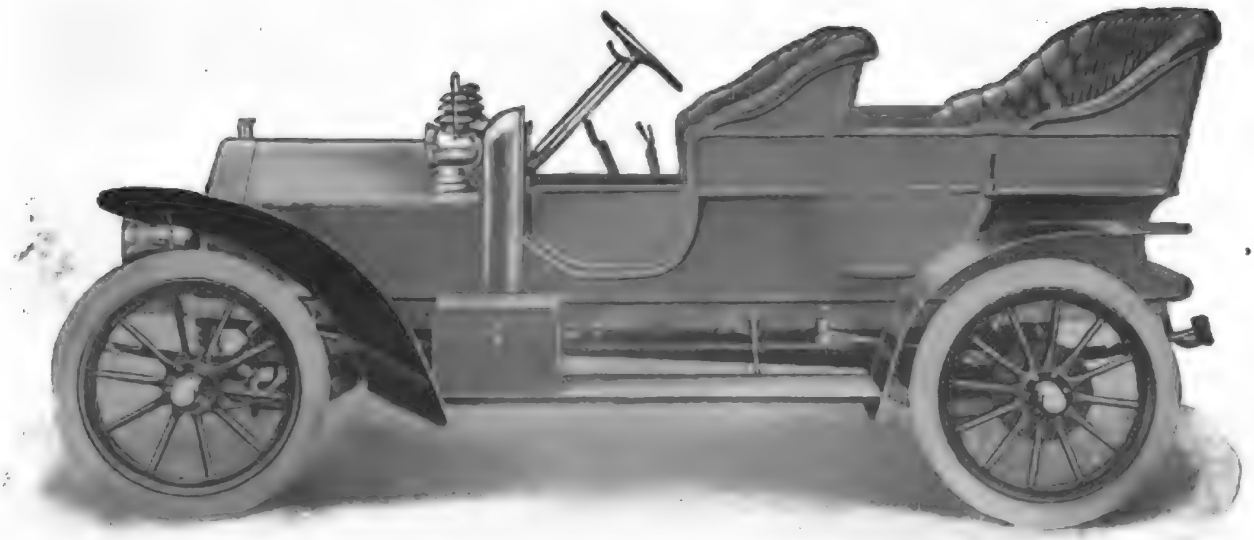
MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS—All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

Digitized by Google



The Oldsmobile Palace Touring Car, Model "S," price $2250, detailed description of which appeared in this publication last week, is notable equally for its carefully proportioned body, its strong, simple and well-balanced chassis and the wonderful attention to detail evident in every part of its construction. The car is low hung, yet has plenty of clearance, and the long wheel base of 106 inches gives a rangy appearance, which is most attractive. The four-cylinder vertical water-cooled motor is of the most thoroughly approved type, and easily develops from 24 to 26 h. p. The tendency to create dust is lessened by the construction of the dust pan and longitudinal arrangement of all parts hung beneath the car, all of which is conducive to general comfort in touring. The transmission is sliding gear, three speeds forward and reverse. The control is of the selective type, the changes being made with a single lever. The brakes are very strong and positive in action. The transmission brake is operated by a foot lever, while the rear hub brakes are controlled by a hand lever. Complete equipment, consisting of two acetylene headlights and generator, two oil lamps and one oil tail lamp, together with tools, etc., is furnished with this car.

OLDS MOTOR WORKS

Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. Ia

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. Ia

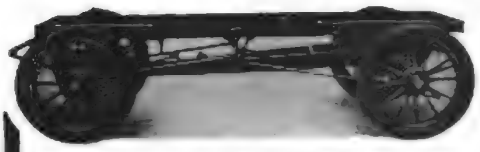
Name _____

Address _____

Digitized by Google

THE MARMON

"A Mechanical Masterpiece"

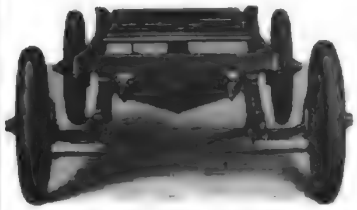


Side View—Normal Position.

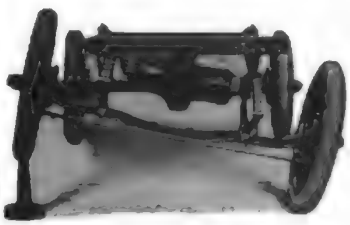
No Jolts for Passengers

No Strains for Mechanism

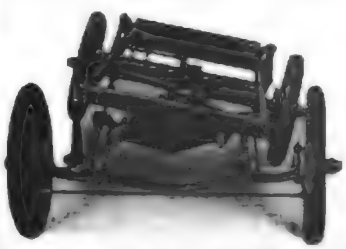
One Front Wheel and Opposite Rear Wheel Each Raised Over a Foot. Not a Strain Anywhere.



Front View—Normal Position.



Front Wheel Raised Over a Foot, Body Level.



Rear Wheel Raised Over a Foot, Lower Frame Level.

THESE pictures afford a clear view of the mechanical beauty of a car that is in all ways superb.

They show how easily the Marmon meets and overcomes the roughest road conditions, through its remarkable flexibility.

The first effect realized is the freedom from jolts and vibrations—a very luxury of motion over any and all roads, unknown in *any other car*.

More important still, no matter how rough the road, the running gear adjusts itself naturally to the ruts and bumps without subjecting the mechanism to binding or twisting strains. This is true of *no other car* regardless of price or prestige.

To determine how any other car would act under similar test, nail three legs of a chair securely to the floor and try to lift the remaining leg. Make some slight allowance in favor of the car because of its springs, and then charge against it the costly mechanism it carries and the great variety of roads over which it must travel, often at high speed. The entire mechanism is thus racked by twisting strains and ruinous friction in any such rigid construction, and not the least of the sufferers are the tires and the passengers.

The Marmon elasticity is supplemented by full elliptic springs but is primarily due to a patented exclusive feature.

Double Three-Point Suspension

Luxurious solid cast aluminum body on one frame, power plant on another frame, *each frame* suspended on three *pivotal* points. Raising or lowering one wheel does not affect the other wheels. No matter which wheels are raised, no matter how the two frames are tilted, the entire power plant and rear axle are *always* in perfect alignment. Straight and rigid shaft drive (without any sort of flexible couplings) delivers a greater percentage of power to the wheels than is possible in any other scheme of transmission.

The Marmon oiling system (fully patented) has no equal. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Simple, unfailing, very economical; has no adjustments. Spur planetary transmission (clutches included) running in oil.

Four cylinder motor; perfectly air-cooled. Spark and throttle control on steering wheel.

The Marmon is stylish, strikingly handsome and very quiet. It is "A Mechanical Masterpiece" in whole and in every part, replete with distinctive features that appeal instantly and forcefully to all who seek a really superior car.

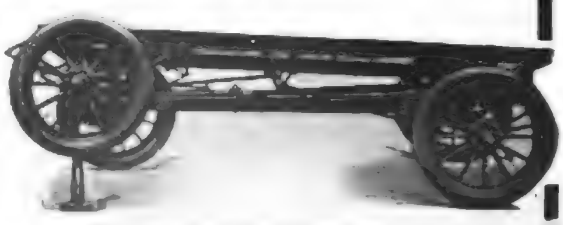
Full description in Booklet No. 1. Write for it.

NORDYKE & MARMON CO. Established 1851 **Indianapolis, Ind.**

Members American Motor Car Manufacturers' Association

Side View—Front Wheel Raised Over a Foot.

Rides Like a Sail Boat



Side View—Rear Wheel Raised Over a Foot.

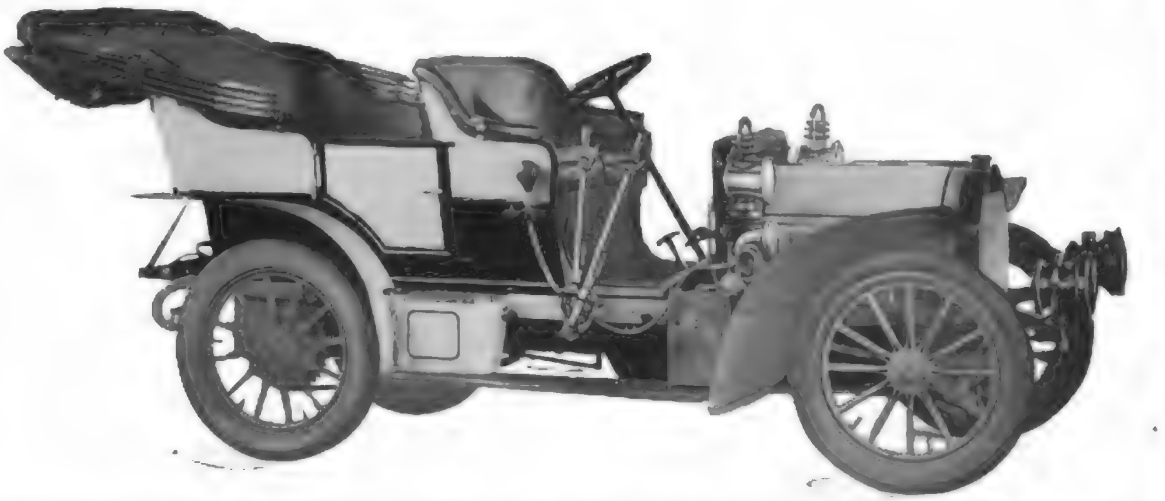
Digitized by Google

Locomobile

EASILY THE BEST BUILT CAR IN AMERICA

We announce two new styles for 1906, a powerful four-cylinder touring car, price $3,000, and a larger car at $5,000, both with complete touring equipment. These models are almost identical in design, contain the same carefully selected material, and are constructed with equal care throughout,—the result of years of careful and consistent manufacture of the standard type of four-cylinder touring car.

Locomobiles are fully equal in mechanical details and running qualities to the best imported cars, but are especially designed for American roads.



SPECIFICATIONS OF 1906 MODELS

TYPE "E" LOCOMOBILE, 15-20 H. P.

Price, $3,000, ready for touring.
Equipment, 5 brass lamps, horn, tire, carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
Body, double side entrance, seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
Motor, 4-cylinder, 3⅜" bore, 4½" stroke.
Lubricator, large mechanical lubricator.
Carburetor, automatic, with balanced throttle valve.
Governor, centrifugal type, prompt and positive in action.
Ignition, make and break with iridium contacts.
Magneto, low tension, our own design and manufacture.
Aluminum Pan, placed underneath the machinery.
Clutch, cone type with ample surface.
Transmission, 3 forward speeds and reverse.
Drive, double side chains.
Universal Joint, double universal joint between clutch and transmission.
Running Brake, double acting type, large and powerful, metal to metal surfaces.
Emergency Brakes, internal expansion type, large and powerful, metal to metal surfaces.
Combined Brake and Sprocket Drum, bolted to each rear wheel spoke.
Axles, "I" section hand-welded axles.
Tires, 32"x4" on all four wheels.
Wheel Base, 93".
Weight, about 2,000 lbs.

TYPE "H" LOCOMOBILE, 30-35 H. P.

Price, $5,000, ready for touring.
Equipment, 5 brass lamps, horn, tire, carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
Body, double side entrance, seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
Motor, 4-cylinder, 4½" bore, 5½" stroke.
Lubricator, large mechanical lubricator.
Carburetor, automatic, with balanced throttle valve.
Governor, centrifugal type, prompt and positive in action.
Ignition, make and break with iridium contacts.
Magneto, low tension, our own design and manufacture.
Aluminum Pan, placed underneath the machinery.
Clutch, cone type with ample surface.
Transmission, 3 forward speeds and reverse.
Drive, double side chains.
Universal Joint, double universal joint between clutch and transmission.
Running Brake, double acting type, large and powerful, metal to metal surfaces.
Emergency Brakes, internal expansion type, large and powerful, metal to metal surfaces.
Combined Brake and Sprocket Drum, bolted to each rear wheel spoke.
Axles, "I" section hand-welded axles.
Tires, 34"x4½".
Wheel Base, 106".
Weight, about 2,900 lbs.

THE LOCOMOBILE CO. OF AMERICA, Bridgeport, Conn.

NEW YORK, 26th St. and Broadway.
PHILADELPHIA, 240 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

The Business Man's Train

between

CHICAGO and NEW YORK

is

"The Pennsylvania Special"

Pioneer 18-Hour Train

which runs every day over

The Pennsylvania-New York Short Line

Leaving Chicago, Union Station, 2:45 p. m., arriving New York 9:45 next morning. Returning leave New York 3:55 p. m., arrive Chicago 8:55 a. m. Train is equipped with Vestibuled and Electric Lighted Library, Smoking, Dining, Sleeping and Compartment Observation Cars.

Seven Other Daily Trains Chicago to New York

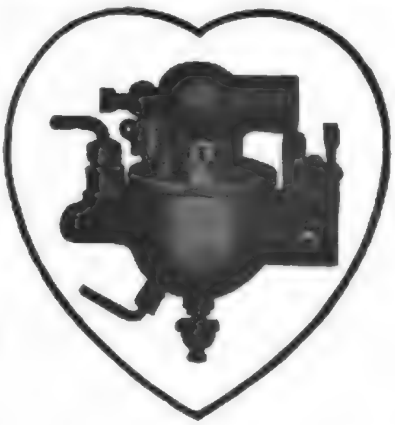
For Time of trains Pittsburgh, Baltimore, Washington and Philadelphia, call at City Ticket Office, 248 South Clark Street, or address

G. G. BELTZHOOVER
District Passenger Agent
Chicago, Ill.

C. L. KIMBALL
Asst. General Passenger Agent
Chicago, Ill.

Digitized by Google

THE HEART OF THE AUTOMOBILE



The Schebler Carburetor

Standard of the World

1,094 3-16 miles in twenty-four hours continuous running on a circular track; 1,000 miles in 21:58:00 4-5 continuous running on a circular track, breaking all world's records by 1:35:19 1-5.

This is the world's record travels of a National car fitted with a SCHEBLER carburetor at the Indianapolis Fair Ground Track, November 16th to 17th. Hundreds of miles were reeled off with scarcely a variation of a second in the time of each.

Is it any wonder that eighty-three of the largest marine and automobile engine builders in the United States and Canada are equipping their motors with the SCHEBLER?

A carburetor that gives a perfect mixture at all engine speeds, regardless of weather conditions, is truly *"The Heart of the Automobile."*

WHEELER & SCHEBLER, Mfrs.

INDIANAPOLIS, IND., U. S. A.

Agencies in all the Principal Cities of the World

P. J. Dusey.....
....431 Wabash Ave., Chicago, Ill., Factory Representative
Excelsior Supply Co.....Chicago, Ill.
Automobile Supply Co.....Chicago, Ill.
Beckley-Ralston Co. .....Chicago, Ill.
E. J. Edmond.....44th St. and 6th Ave., New York City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, R. I.
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.
National Electric Supply Co.....Washington, D. C.
Smith Electrical Engineering Co.....Watertown, N. Y.
The Wallace Bros. Co.....Norfolk, Va.
N. Philadelphia Auto Station.....
.....3425 N. Broad St., Philadelphia, Pa.
F. C. Bowlus.....332 Baronne St., New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chanslor & Lyon Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Co.....Los Angeles, Cal.
McCullock & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co.....Toronto Junction, Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Neill & Co.....38 Fenchurch St., London, England

Digitized by Google

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

has arrived and is now on exhibition at our showrooms. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. Equal to any car, built in any country at any price. Make and break spark. Sims-Bosch Magneto. Bevel gear drive. Continental Tires. Aluminum bodies.

MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway and 50th Street, New York

Digitized by Google

ANNOUNCEMENT

CORBIN CARS FOR 1906

Model E, Light Touring Car, Price $2000

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs of special design and great flexibility. Wheels 32 x 3½ inches. Weight 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools constitute the equipment.

Model G, High Powered Runabout, Price $1800

The specifications of this model de luxe two passenger car are identical with the Model E with the exception of wheel base, 93 inches. Body latest French type for two passengers, divided front seats. Long, graceful tail box. The metal parts are lightened wherever compatible with safety. Speed 50 miles per hour.

Annular Ball Bearings Are Employed Throughout

Agencies in certain desirable territory are still open. Representative dealers are requested to communicate with us promptly to insure early delivery of cars.

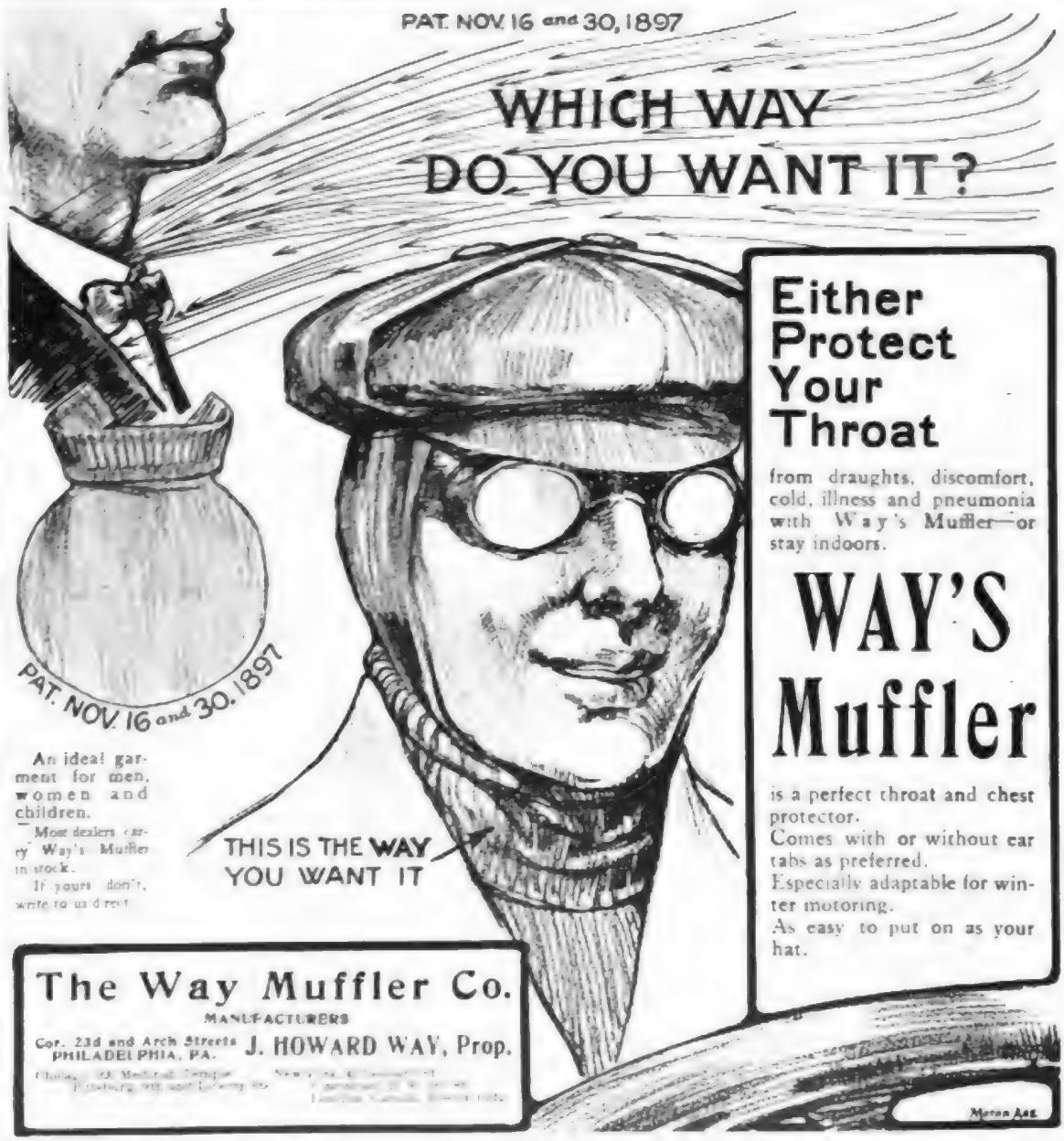
Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati

Digitized by Google

WAY'S MUFFLER



An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct.

Either Protect Your Throat

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

WAY'S Muffler

is a perfect throat and chest protector.
Comes with or without ear tabs as preferred.
Especially adaptable for winter motoring.
As easy to put on as your hat.

The Way Muffler Co.

MANUFACTURERS

Cor. 23d and Arch Streets PHILADELPHIA, PA. J. HOWARD WAY, Prop.

Digitized by Google

SEND FOR THIS BOOKLET

of Peerless 1906 Information, if you intend to buy a 1906 car—or if you are interested in automobiles—for it contains one of the most complete mechanical descriptions of an automobile ever printed. It not only tells just what are the famous Peerless mechanical principles, but it also explains why we have found them best.

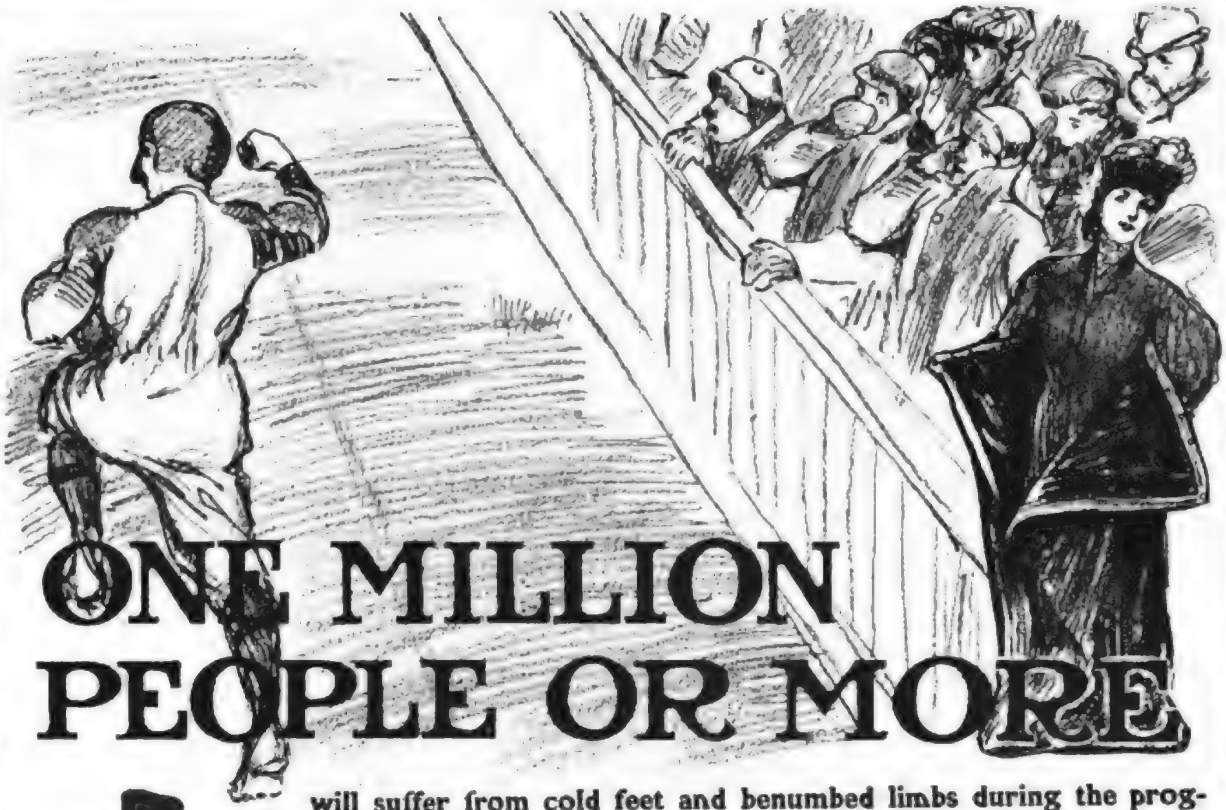
A postal will bring it—Send today

THE PEERLESS MOTOR CAR CO.

802 Quincy Street, Cleveland, Ohio

Member A. L. A. M.

Digitized by Google



ONE MILLION PEOPLE OR MORE

will suffer from cold feet and benumbed limbs during the progress of the many football games throughout the country on Thanksgiving Day, this year.

Everybody who has ever witnessed a gridiron battle in other years will recall that one unpleasant feature of the afternoon's sport.

DAVIS ROBES OF COMFORT

SOLVE THE PROBLEM ... ABSOLUTELY AND FOREVER

Imagine the pleasure of watching the game, snugly encased in a luxurious, soft and roomy, air-tight, plush-lined Robe of Comfort. No cold can possibly attack your feet or limbs. **It makes you feel as Warm as Toast.**

How many people will prove the wisdom which experience is supposed to bring by ordering at once a Davis Robe of Comfort, and thus be prepared not only for such outdoor occasions as football games, but for winter automobiling, carriage riding and sleighing as well, for **many years to come.**

Davis Robes of Comfort are patented. You can get them from us only, but there are **Three Ways to Obtain a Davis Robe,** any one of which is entirely satisfactory to us. Read them:

1st. When cash is sent with order, **WE PREPAY EXPRESS CHARGES.**
2d. We send C. O. D. with privilege of examination before accepting.
3d. We send on approval to responsible people and pay **return** charges if not satisfactory.

PRICE

Standard Robe, $10.00 **Baby Bear, fur front (elaborate) $20.00** **Arctic Over-Pants, $10.00**

NOTE.—We cover this robe, on order, with seal skin, lynx, otter or any kind of fur desired. Prices on application.

This is The DAVIS ROBE OF COMFORT

It is exactly what you want if Comfort interests you. Plenty of room for the feet and legs.

Made of Finest Pure Rubber Drill or Best Grade of Mackintosh, entirely lined with heavy imported dark green Plush. Wearing portion under feet covered with calfskin.

Fastens with Heavy Large Glove Clasps. Adjustable to any size waist. Can be carried on the arm when not in use. Light in weight and not bundlesome.

Expressed to ANY ADDRESS on same day order is received.

It will keep you **WARM in the coldest weather.**

WE GUARANTEE IT

Money refunded if for any reason goods are not satisfactory.

Illustrated Booklet and testimonials of prominent business men from both city and country everywhere free on request.

DAVIS ROBE CO. 1327 CHAMPLAIN BLDG. CHICAGO, ILL.

REFERENCES:

Merchants' Loan & Trust Co., Marshall Field & Co., any Express Company or Motor Age

ORDER TODAY—Goods shipped same day order is received

TO CHICAGOANS: Phone us, Central 2510, and we'll send it over to your Home or Office

MOTOR AGE says: "It is Perfectly Safe to Remit in Advance to the Davis Robe Co. Their goods are exactly as represented."

We also manufacture a Bifurcated Robe of Comfort or

ARCTIC OVER-PANTS

with feet. They enable the wearer to leave car at will and walk about in the mud, slush or snow.

They keep the shoes and clothes clean and are GREAT

FOR THE MAN AT THE WHEEL

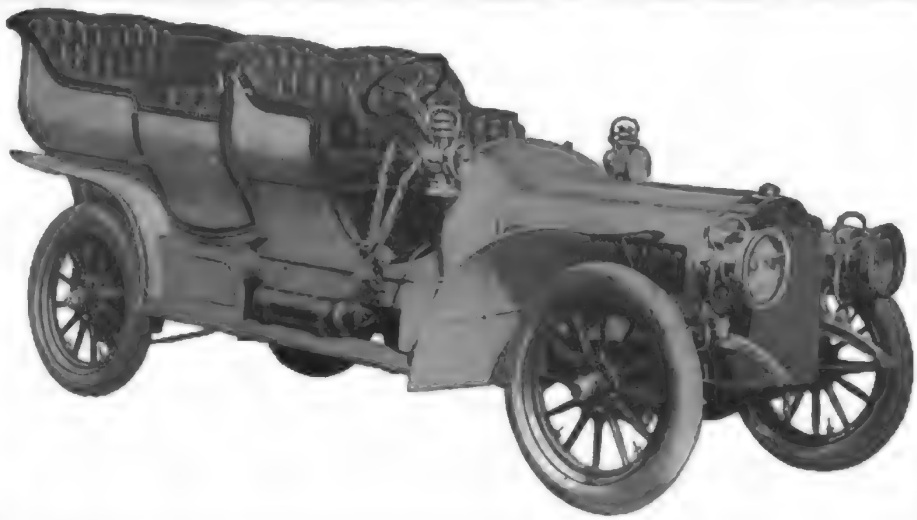
Made of Best Rubber Drill or Mackintosh; lined with Heavy Plush, Waterproof calfskin leather feet.

In ordering send inside seam and waist measure over clothing. **Price $10**

Digitized by Google

The New Thomas

Greatly Exceeds My Most Sanguine Expectations Experts Say It Is a Wonder



NO customer is so critical or hard to please as the manufacturer, who, regardless of cost, absolutely determines to do his utmost to build the best car in the world.

But, when an ordinary Stock Touring Car, without special preparation or intention, runs sixty miles an hour on the level, and climbs a 10 per cent grade on the high speed at forty miles per hour, within an hour after it first leaves the shops, it is something that not one car in a thousand will do.

Under favorable conditions we should do sixty-five miles an hour.

I am more pleased than ever with its speed, hill-climbing, quiet operations and mechanical superiority, and cordially urge disinterested automobile experts everywhere to rigidly investigate our claims, and compare our material, workmanship and design with the highest-priced cars in the world—we will win the verdict.

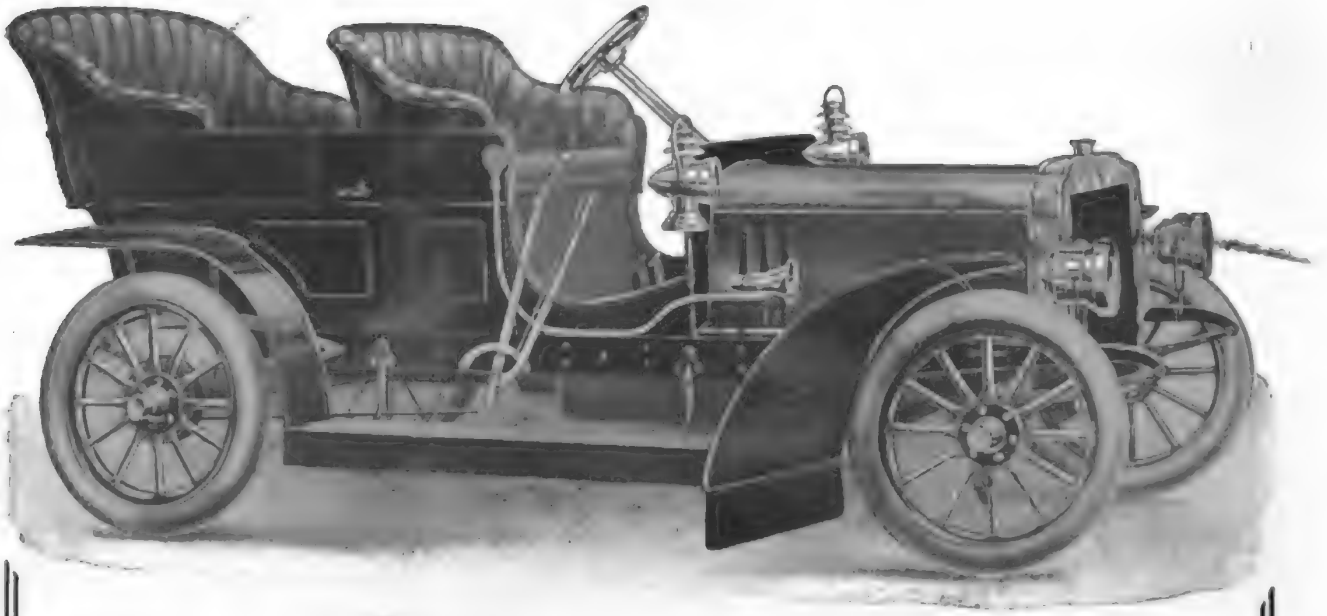
E. R. THOMAS.

For the E. R. THOMAS MOTOR CO., Buffalo, N. Y.

E. R. THOMAS MOTOR COMPANY

1417 Niagara Street Members A. L. A. M. **BUFFALO, N. Y.**

Digitized by Google



1906 Ford 6-Cylinder Touring Car

Price $2,500

6 cylinder—40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2,000 pounds.

1906 Ford Runabout, as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show. ... ...

Ford Motor Company

Detroit, Mich.

Member American Motor Car Manufacturers Association, Chicago

Canadian Trade Supplied by the Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

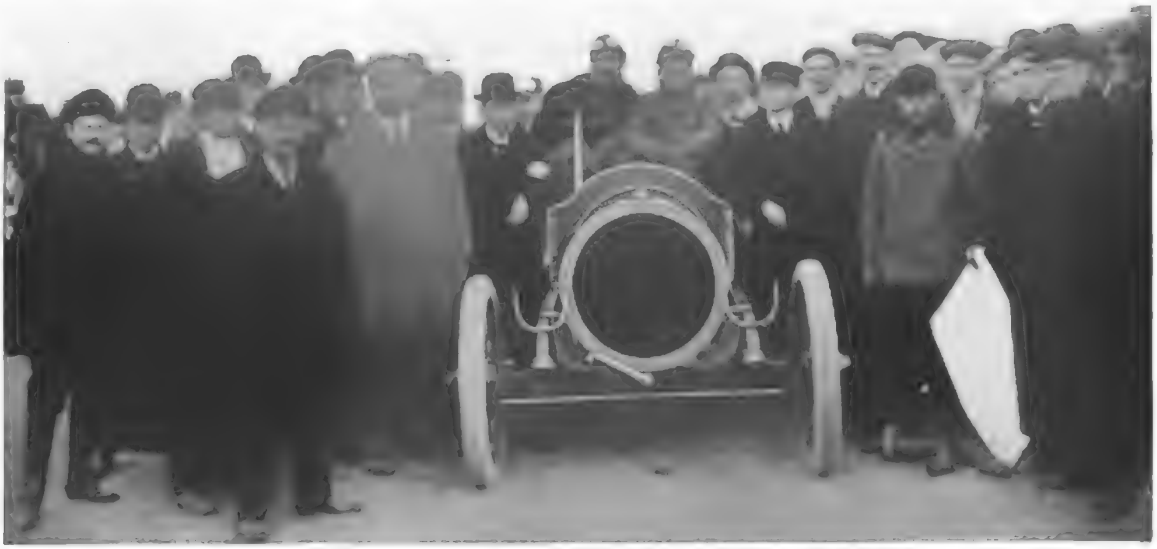
Digitized by Google

WATCH FOR THE ROUND RADIATOR

National

WATCH FOR THE ROUND RADIATOR

Breaks World's 24-Hour Record



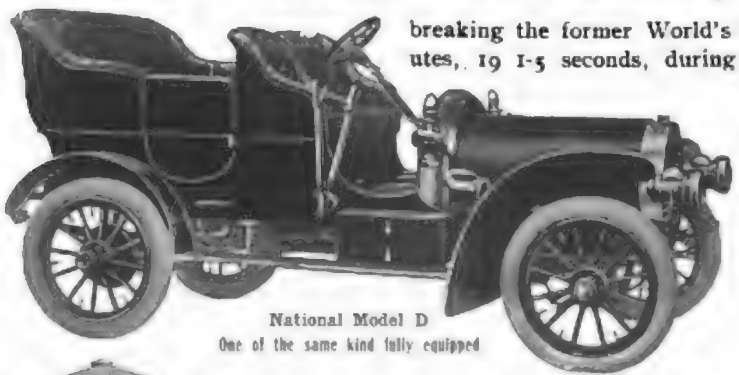
The World's Record-Holding National and Officials After the Finish of the 24-Hour Run

A National stripped 1906 Stock Car, at Indianapolis, November 16 and 17, made

1094 3/16 MILES IN 24 HOURS

breaking the former World's Record by 78 9-16 miles. Time for the first

1000 miles, 21 hours, 58 min., 4/5 sec.



National Model D
One of the same kind fully equipped

breaking the former World's Record for 1000 miles by 1 hour, 35 minutes, 19 1-5 seconds, during this most convincing demonstration of the

Unfailing Reliability of NATIONALS

Other records, too numerous to mention in this space were smashed to smithereens. Write us for details and anything else you want to know.

WATCH FOR THE ROUND RADIATOR

OUR 1906 MODELS ARE READY

NATIONAL MOTOR VEHICLE CO.

1006 East 22d Street INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association, Chicago.

WATCH FOR THE ROUND RADIATOR

Digitized by Google

An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. **All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new.** His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with **Goodrich Tires, 3x30 inches.** I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1605 Broadway
Buffalo, 731 Main St. — Cleveland, 430 Superior St.
San Francisco, 370 Mission St. — Chicago, 141 Lake St.
Boston, 161 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

Volier Horns

¶ The *reeds* are what stick most horn makers. Successful metal mixtures and tempering processes for horn reeds are the secrets of a very few men. The non-corrosive, vibratory metal reeds in genuine Volier Horns, which are unaffected by weather and which keep their tone indefinitely, are a feature which alone make Volier Horns superior to any other horns offered in America; *but,* in addition, there is the matter of

¶ The *bulbs.* In ordinary horns the bulbs are steam cured. They split and crack from use and vibration. In Volier Horns the bulbs are *chemically* cured — another secret process. The *chemical* curing makes Volier bulbs soft, pliable and tough. Volier bulbs do *not* split or crack.

¶ Horn fashions are set by the Volier, which we exclusively import from France. Witness the "Dragon" horn craze this season, founded on the Volier "Dragon."

¶ We can now give you illustrations and quotations on the 1906 Volier styles.

The Post & Lester Co.

Hartford, Connecticut

SOLE AMERICAN DISTRIBUTORS

Digitized by Google

A Mild Comparison

A comparison of the record of the "HAYNES" car in the elimination race for the Vanderbilt cup, with that of far more powerful cars that were allowed to enter the real race
—is most interesting.

Get a record of the two events
—and compare.

Put the "HAYNES" Elimination record beside the records of some of the other cars in the real race *—and compare.*

Study what the "HAYNES" Car *did,* and what some of the others *didn't do—and compare.*

A few live agents wanted, in a few sections. WRITE QUICK.

We are booking orders for exact duplicates of our Vanderbilt entry, in the order of their receipt. Write us about it.

The Haynes Automobile Company

Kokomo ... Indiana

NEW YORK Members A. L. A. M. CHICAGO

Cadillac Dependability

JOHN W. MOUNT & BRO.
Manufacturers and Dealers
Carriages and Automobiles

RED BANK, N. J., Nov. 13, '05.
THE CADILLAC MOTOR CAR CO.
Detroit, Mich.

GENTLEMEN:

I think you are entitled to know of the good work the single-cylinder touring car that I have been running this summer has done. It has never failed to take me wherever I have started to go and have run it almost 5,000 miles since July. It always comes back stronger and seemingly with more power than when starting out.

One of the interesting runs I made was to Atlantic City, a distance of 106 miles from here. Made the run in 5 hours, each way, without having to make a stop for anything and the whole run of 212 miles on 10 gallons of gasoline and less than a cup of oil.

Another run from here to Trenton, 45 miles in 2 hours, speaks well for a car of this power.

These trips were made with four people in car, up and down hills and slacking up while going through towns.

I think there is more real **pleasure** and less **trouble** embodied in the little single-cylinder touring car than any car built, regardless of cost.

This car that I have been running and described is only what all the other cars of this type we have sold have done.

Wishing you all success, I am,
Yours respectfully,
[Signed] JOHN H. MOUNT,
Of the firm of J. W. Mount & Bro.

'NUF SAID

CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

Member Association Licensed Automobile Manufacturers.

Digitized by Google

The new **Stoddard-Dayton** Model D Touring Car has speed and symmetry in every line.

Yet there is not an ounce of weight, not an inch of steel, not a bolt, a nut, nor a bearing, sacrificed that means reduced strength or safety.

At highest speed, the STODDARD-DAYTON is instantly and positively responsive—always under perfect control.

Here is how stripling-weight and dependable strength are ideally combined: The frame is made from hot-rolled, high-carbon, pressed steel. This steel is so tough, so close-textured, that the frame will bear great weight without deflecting a hair's breadth.

In the STODDARD-DAYTON the weight and strain are so evenly distributed that no point gets the brunt. The four-vertical-cylinder (4½x5 in.) motor, of special type, and the transmission are carried on dropped sub-frame, substantially re-inforced. There are roller bearings throughout. The speed change is of the selective type; you can go from high speed to low speed in a second, without clashing or friction. Mechanical lubrication keeps all working parts swimming. Sturdy artillery wheels, 32x4 inches; 12 spoke front, 14 spoke rear. Proportion of power to weight: ***One*** horse power to every ***sixty*** pounds. An exquisitely modeled car, finished in pearl gray, with tan upholstering—distinctly an art creation. Other colors optional.

The 1906 STODDARD-DAYTON at $2,250 represents an honest commercial value between two extremes: (1) a four-cylinder car at a high or fictitious value; (2) a four-cylinder machine at a low and impossible valuation—the most expensive kind of economy. It is the right car and the right guarantee is back of it to insure your satisfaction and protection.

Write for our 1906 catalog descriptive of the new STODDARD-DAYTON Touring Car, Runabout and Limousine. Mailed free.

THE DAYTON MOTOR CAR CO.
Dayton, Ohio

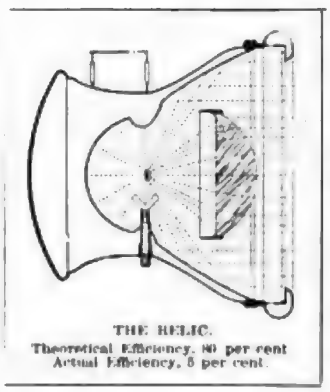
Stoddard-Dayton

"Again—as good as it looks"

CERTAINLY!

THE WORLD DO MOVE But Sometimes It Moves In a Very Small Orbit

FOR EXAMPLE



THE RELIC.
Theoretical Efficiency, 80 per cent
Actual Efficiency, 5 per cent.

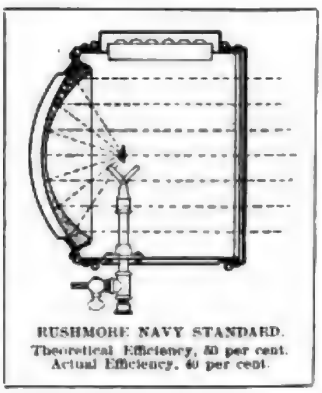
Here is a Searchlight which we used to make many years ago. We call it the Relic.

Theoretically it utilizes nearly every ray from its source of light.

Practically, in the presence of burning acetylene, the spun copper, silver plated reflector cannot be kept bright or even clean, and it absorbs most of the light instead of reflecting it. We discarded the Relic ten years ago, because of its ridiculously low efficiency compared with the Rushmore Navy Standard (short focus) Lens Mirror which we have since used.

The patents under which we manufactured the Relic have since expired, and it has been resurrected by some of the other fellows as the latest ever.

When you compare "Lamps" compare them as we did—in the dark—and see that their flames are the same size.

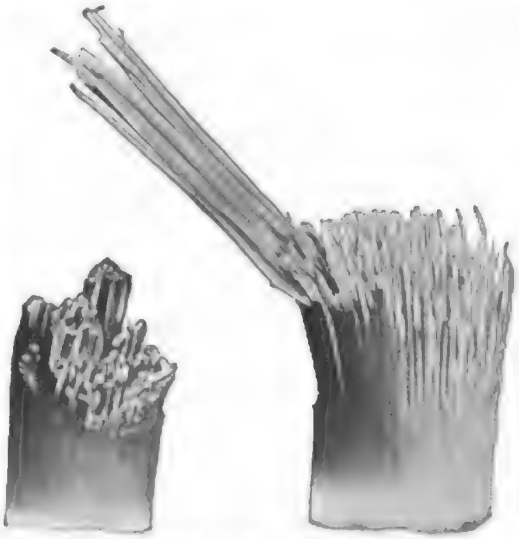


RUSHMORE NAVY STANDARD.
Theoretical Efficiency, 80 per cent.
Actual Efficiency, 40 per cent.

Rushmore Dynamo Works

PLAINFIELD, N. J.

Digitized by Google



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 7

A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.

Don't lull yourself into a sense of false security by imagining that all wheels rank alike. Read what the *Horseless Age* has to say on the subject:

> "As an illustration of what can be accomplished by suitably disposing material, no better example can be found than the wood wheels fitted to motor cars. No part of the car has its material subjected to stresses under a greater variety of conditions. True, there are wheels which are of no value; wheels, in fact, which have no factor of safety and are ready to collapse at the first turn; but they are not the wheels one ought to find on a car."

Collapse is usually traceable to two causes—defective material or unsound construction. And sometimes to both.

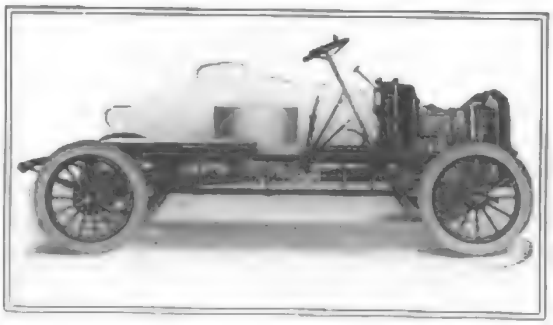
The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

IMPERIAL WHEEL COMPANY

FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

THE INCOMPARABLE WHITE



Above is shown the chassis of the Model "F" White car which we are now delivering with touring car, runabout, limousine, victoria and landaulet bodies.

Steam power, as utilized in the White car, possesses unique advantages. There is absolutely no noise, no odor, no vibration and the speed of the car is controlled entirely by throttle. There is an ever-present reserve of power which is often found most useful.

The White steam generator is totally unlike any other steam-making device ever designed. To illustrate the radical difference, we might point out that in our generator the water is at the top and the steam at the bottom. In every other type of boiler the steam is at the top and the water at the bottom. The safety, simplicity and reliability of the system is demonstrated by the performance of the thousands of White cars now in use.

Write for White Bulletins which tell the story of White victories

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

G & J

TIRES
Hold the 100-Mile
WORLD'S RECORD

At Indianapolis, Saturday, November 4, W. F. Clemens in a National car fitted with G & J Tires reduced the 100-mile track record to 1:53:21⅘ —not a moment's delay on account of tires. G & J Tires are speedy. They are the most serviceable tires on earth.

G & J TIRE CO.
INDIANAPOLIS

BOSTON BUFFALO CLEVELAND DETROIT CHICAGO DENVER SAN FRANCISCO

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,400

8 H. P. Tourabout
$750

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.
Members of American Motor Car Manufacturers' Association. Agents in Principal Cities.
New York Agents: MAXWELL-BRISCO, INC.
Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

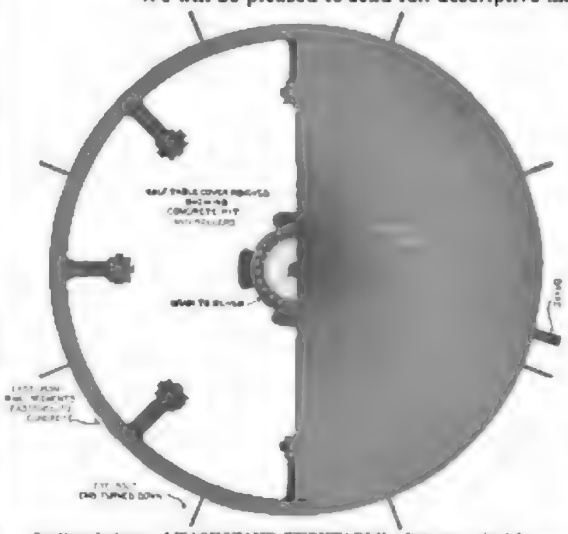
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

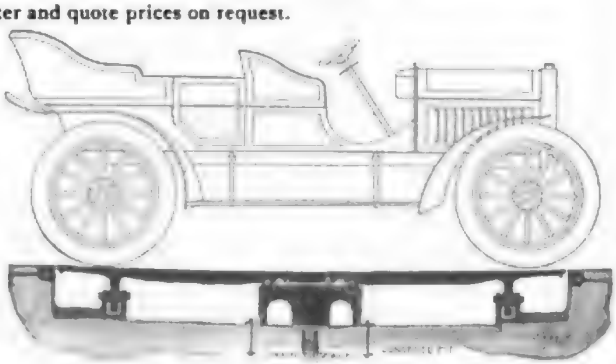
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

"Firestone"

SIDE WIRE TIRES

It takes knowledge born of experience to manufacture a tire that will continue to stand the strain of use on commercial vehicles.

In many instances trouble with tires has made a commercial vehicle unprofitable until Firestone Side Wire Tires were adopted.

We have in our office evidence of what Firestone Tires have done after many others had been tried and found deficient.

"Then Why Not Firestone?"

FIRESTONE TIRE & RUBBER CO., Akron, O.

New York, Chicago, Boston, Philadelphia,
St. Louis and Detroit

Digitized by Google

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

24 h. p. Berg Touring Car

IMMEDIATE DELIVERY MEMBERS A. L. A. M.

MICHELIN

Tires of the Very Highest Grade

Michelin Tires carry more guaranteed weight per wheel than any other pneumatic tire made in the world.

In Vanderbilt Cup Race the Michelin Tires were the only stock tires that did not require attention from start to finish—a record which is entirely exclusive from all other makes represented.

Michelin Tires are Copied but Never Equaled

MICHELIN TIRE AMERICAN AGENCY, Inc.

6 WEST 29TH STREET
NEW YORK

E. D. WINANS, Gen'l Mgr. Telephones: 760-761 Madison Sq.

Branches in all large cities in the United States

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Pantasote
LEATHER

An Ideal Material for Automobiles and Motor Boats

For Seatings — Pantasote Leather wears better than the natural hide, it contains no oils to dry out, and is impervious to weather; will not crack, peel or chip.

For Canopy and Cape Tops — Pantasote Top Materials give a handsome finish to the car, are more durable than the real hide, absolutely water, stain and grease-proof, and vastly superior to the various rubber and inferior imitations of leather, as Pantasote always remains soft and pliable, and is not affected by climatic conditions.

Send for samples of the new and complete 1906 line

The Pantasote Company

11 Broadway
NEW YORK

926 Monadnock Bldg.
CHICAGO

PENNSYLVANIA CLINCHER

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

The Hartford Dunlop Automobile Tire

Fastest run so far from Paris here, the last half hour in a driving rainstorm. No trouble yet with the Dunlops and we now hope to get to Havre and make the entire journey on the
original castings Walter Hale
ROUEN – Station de la Pucelle Aug. 4, '05.

Postal No. 4
Watch for
Others to
Follow

The Hartford Rubber Works Co., Hartford, Conn.

KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

Jones Corbin Motor Co.

ROOMS 5 AND 6
430 WALNUT STREET

PHILADELPHIA, PA. Aug. 17th, 1905

The Continental Caoutchouc Co.,
43 Warren St., New York City.

Gentlemen:

Your favor of Aug. 15th. is received and we would say that you were misinformed in regard to our tires.

We have travelled over seven thousand miles with the set of tires mentioned in your letter and have never had a pump on the rear tires (34x4-1/2) but have experienced some trouble with inner tubes on the front pair and we think it is because we are using too small a tire there (34x3-1/2).

Our machine travels very fast over the worst class of roads and the distance of seven thousand miles means something.

This is the only pair of tires we ever heard of going this distance without being pumped.

Yours very truly,
Jones-Corbin Motor Co.,
Per

We Stand Corrected

We would rather underestimate than exaggerate on the performances of

Continental Tires

Admitted to be "The World's Best."

The CONTINENTAL CAOUTCHOUC CO.
EMIL GROSSMAN, Gen'l Mgr.
43 Warren St., New York
Factory, Hanover, Germany

THE Compound WINS

Outclassing all Touring Cars regardless of price, in the New York Motor Club's Six-day National Economy Test, Oct. 30—Nov. 4.

Total Cost of Carrying Five Passengers $18.63

The motor went through the test without the slightest adjustment, proving conclusively that we have brought the compounding of a gasoline motor to a high state of perfection.

700 Miles Using But 43½ Gallons of Gasoline

Compound No. 6, driven by F. C. Carter, covered the entire distance at a cost of $3.73 per passenger, and negotiated all hills easily, including the famous Nelson's Hill on the road to Albany.

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

Stanhope

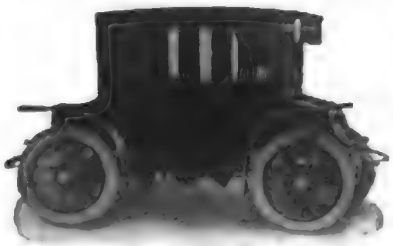
Baker Electrics

Depot Wagon

embody every possible good feature required to make them what they are so frequently called—

The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.

IMPERIALS, STANHOPES, SURREYS
DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co.

24 Jessie Street :: CLEVELAND, OHIO

Outside-Driven Brougham

Do You Sell Automobiles?

Most discriminating drivers now use

The Fisk Mechanically Fastened Tires

but the man who has yet to try them will also appreciate your good judgment in equipping his car with them.

The sense of security and full comfort that users of Fisk Tires experience will go far towards making your selection of such an equipment a lasting advertisement.

The long service they render—the comfort they insure—and the amount of time, energy and money they save make their use worth while.

The Fisk Rubber Co., Chicopee Falls, Mass.

BRANCHES

New York, 754 Seventh Ave.
Boston, 226 Columbus Ave.
Springfield, 40 Bridge St.
Philadelphia, 138 N. Broad St.
Minneapolis, 704 Hennepin Ave.
Atlanta, 103 N. Pryor St.
Syracuse, 423 S. Clinton St.
Buffalo, 893 Main St.
Cleveland, 318 Euclid Ave.
Los Angeles, 1034 Main St.
Detroit, 254 Jefferson Ave.
Chicago, 1251 Michigan Ave.
Kansas City, 1330 Main St.
St. Louis, 3908 Olive St.
San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

Digitized by Google

E. P BLAKE CO.

AUTOMOBILES

69-75 HUDSON STREET

Boston, Mass. Nov. 4, 1905.

Jackson Automobile Co.,

Jackson, Mich.

Gentlemen:-

We are sending you today under separate cover a photograph of a "Jackson" car that has been run this season over 10,000 miles by the odometer. We really believe it would pay you to get this into the Trade Journals if the expense is not too much.

You wrote us sometime ago that you would have either the Model "C" or "D" made with detachable tonneau with fish-tail deck. Have you as yet decided which model you will have in this way? If so, kindly write us the price of machine without the tonneau. We believe it would be advisable to have the cheaper car with detachable tonneau.

Yours respectfully,

E. P. BLAKE COMPANY

Per E P Blake

Mgr.

Enc. EPB-B.

P. S. The tires on this car are Diamond detachable. The two forward rims have never been touched and the two rear tires have been retreaded once. This car is owned and driven by Mr. H. H. Bates, Brockton, Mass.

THE accompanying letter and picture explain WHY every agent we had on our list for 1905 has contracted for Jacksons for 1906; ¶ *Why* every "Jackson" driver is an advertisement; ¶ *Why* you, if you have the auto fever, should buy the Jackson; ¶ *Why* the Jackson has the world's record for five miles on a circular track for two-cylinder cars; ¶ *Why* the Jackson won second in the non-stop run from Chicago to St. Paul.

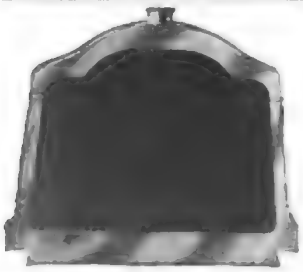
THREE MODELS:

MODEL "C" $1250.00, 20-24 H. P.
MODEL "D" $1500.00, 20-24 H. P.
MODEL "G" $2500.00, 40-45 H. P.

OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.
L. C. Howard, 1655 Broadway, N. Y.
Ormond Auto Co., Brooklyn, N. Y.
E. P. Blake Co., Boston, Mass. New England distributors.
East Liberty Auto Co., Pittsburg, Pa., 5969 Centre Ave.
Diamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.
E. K. Hauser, 1233 New York Ave., Washington, D. C.
C. R. Dench, Erie, Pa.
Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.
Paxson Motor Car Co., Cleveland, O.
Hagmann & Hammerly, Chicago, Ill.
Seidler-Miner Auto Co., Detroit, Mich.
The Jackson Auto Co., 3085 Olive St., St. Louis, Mo.
Chas. R. Johnson, Coldwater, Mich.
Chas. T. Bisch, Springfield, Ill.
The Motor Car Co., Minneapolis, Minn.
Sioux Falls Auto & Supply Co., Sioux Falls, S. D.
The David Bradley Co. of Wisconsin, Fond du Lac, Wis.

JACKSON AUTOMOBILE CO., :: Jackson, Mich.



Tubing used in the construction of Long Spiral Tubing Radiators is spirally wound with a crimped Radiating COPPER flange. COPPER IS COPPER. TIN IS SHODDY. We use COPPER ONLY. Catalogue, Illustrating Many New Types, now in press. Send us your name for our mailing list

ANNOUNCEMENT TO THE TRADE

Commencing Nov. 4th the Long-Turney Mfg. Co., of Rome, N. Y., began the manufacture of

LONG SPIRAL TUBING RADIATORS AND HOODS

Heretofore these goods had been marketed EXCLUSIVELY by the Long Mfg. Co. of Chicago, but the unprecedented demand rendered it imperative that a plant be established in the East to aid in the handling of Eastern and Export trade. The new company, which is under the management of Mr. George W. Turney (for the past 14 years with the Rome Brass & Copper Co.) has been licensed to use all patents, and patents pending, of the Long Mfg. Co. on Spiral Tubing, Radiators and Hoods.

LONG MFG. CO., Chicago, ILL.

LONG-TURNEY MFG. CO. ROME, N. Y.

Digitized by Google

Change Tires 30 Seconds Goodyear Universal Rim

SUPPOSING you were 25 miles from home, and your tire exploded. And you hadn't another with you. And when you stopped at the garage, the man said: "I'm sorry, but I haven't a single tire of that make."

Wouldn't it make you mad?

Of course it would, if you had an *ordinary* rim.

But if you had a Goodyear Universal Rim, you would smile and say: "Bring on any old tire, as long as it's a clincher my rim will take it." And in less than three minutes you would be enjoying the scenery once more.

Because it *isn't* an all-day job to take off and put on a tire when your car has Goodyear Universal Rims. Just jack up the wheel and in 30 seconds the old tire is off, and in another 30 seconds the new tire—ANY kind—is *on*. You need no tools but the hands—and are "fixed up" and on the road while the man with *ordinary* rims is hunting for his crowbars and levers.

Figure 1

You see the flange comes right off on Goodyear Universal Rims, like Fig. 1.

And then a 30-inch tire (for example) slides right on to the 30-inch rim like Fig. 2, as easy as you would put on your hat. On an ordinary rim you would have to pry that 30-inch tire over a 31-inch flange.

Figure 2

You know what a profanity-inspiring job that is, and it doesn't do the tire any good, either.

Now this is all there is to taking off and putting on a tire when you have Goodyear Universal Rims. See how simple and easy it is.

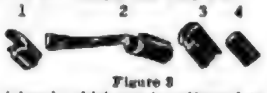


Figure 3

The rim is made up of four parts, like Fig. 3.

Nos. 1 and 3 are the removable flanges (rings), which can be adjusted to any clincher tire.

No. 2 is the base of the rim attached to the felloe of the wheel. It can be used without fitting on any standard wheel built for the standard clincher rims.

No. 4 is the locking ring, which holds the flanges in place.

Figure 4

If you have decided to relieve yourself of all tire troubles and in consequence ride Goodyear Detachable Auto Tires, a section of the rim, when put together, would be like Fig. 4.

Or, if you ride an ordinary clincher tire, the rim section would look like Fig. 5.

The ring which holds the flanges in place is split at a point alongside the valve stem, like Fig. 6.

Figure 5

It can't be removed (and, of course, the tire can't come off) while the flange presses against it.

This flange is kept tight against the ring by a plate which slips over the valve stem, like Fig. 7.

Figure 6

When you wish to remove the tire, loosen the nut which holds the valve stem down, and push the stem up through the rim. This pushes up the plate and lets the flange ring slide inward, like Fig. 8.

Then lift out the locking-ring, slip off the flange, and pull off the tire.

Time, 30 seconds. No tools but the hands.

Figure 7

Those who are weary of tire troubles are specifying Goodyear Auto Tires on Universal Rims. This equipment *costs no more* than the ordinary kind, and multiplies the pleasures of motoring many times.

Figure 8

Ask for our "Good News Book" and find out all the good points of the Goodyear Auto Tire and Universal Rim. It's of vital interest to the Manufacturer, Dealer or User who is satisfied with nothing but *the best*.

THE GOODYEAR TIRE & RUBBER CO., Wallace Street, Akron, O.

Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 130 Lake St.; Cincinnati, 247 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 696 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces **two impulses every time the flywheel turns.** As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

GAS-AU-LEC

"THE SIMPLE CAR"

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World

—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

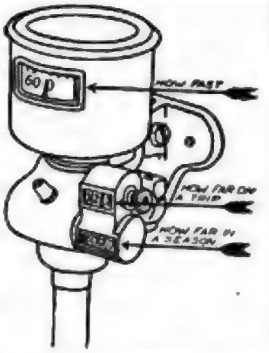
40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

Digitized by Google

THE AUTO-METER

for your new 1906 car



will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.** This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1281 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

Keeps Your Car Bright

Keeps Your Car Clean

Makes Old Cars Look Like New

HOFFHEIMER SOAP CO.

CHICAGO

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

HAVE YOU SEEN THE NEW **KOKOMO** MECHANICALLY-ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

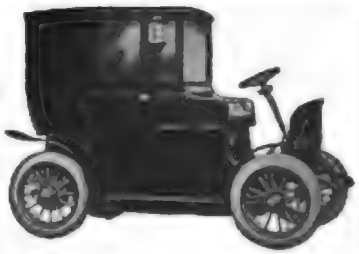
When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

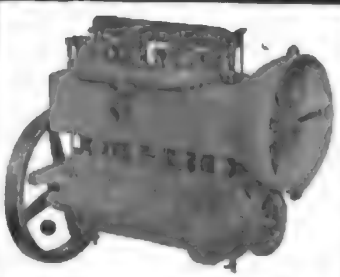
ELECTRIC VEHICLE COMPANY

Members Association Licensed Automobile Manufacturers

Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

WE HAVE IT



Absolutely Tested by all kinds of Herculean Work

Positively Proved by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on outer end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

AIR COOLED VERTICAL

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3½x4 inches.
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¾ inches.
Bearing on Connecting Rods, 2x2¼ inches.
Bearing on Wrist Pin, 1¾x1¾ inches.
Connecting Rods of drop forgings with phosphor bronze Crank Shaft.
Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 19¾ inches.
Center of Crank Shaft to bottom of Motor, 4¾ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

REFERENCE: JOHN MANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.

Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.

DOES NOT CONFLICT WITH FIRE ORDINANCES.

DOES NOT BECOME A PART OF THE REAL ESTATE.

Easily erected by unskilled labor and can be moved as often as desired.

By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.

We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.

107 West Monroe St. :: Chicago, Ill.

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE
With All Goods Bearing This
TRADE MARK

TRADE KOKUK MARK
REGISTERED

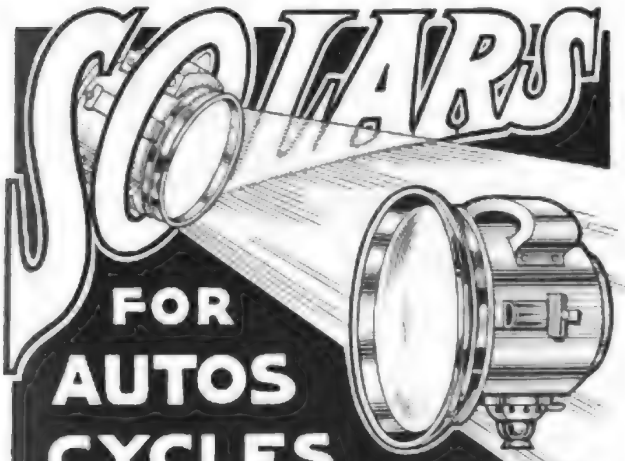
MANUFACTURED EXCLUSIVELY BY
F. S. CARR
74 Pearl Street, BOSTON, MASS.

Digitized by Google

The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

SOLARS

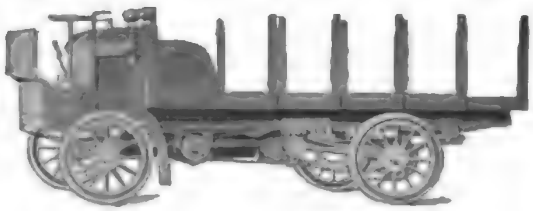


FOR AUTOS CYCLES OR LAUNCHES

MR. DEALER: Why not handle a line that you know will satisfy your customers instead of taking chances on "just as good" lamps. YOUR profit is as MUCH or MORE on Solars, and your customers "stick." Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO.
New York Office, 11 Warren St. ENOSHA, WIS.

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

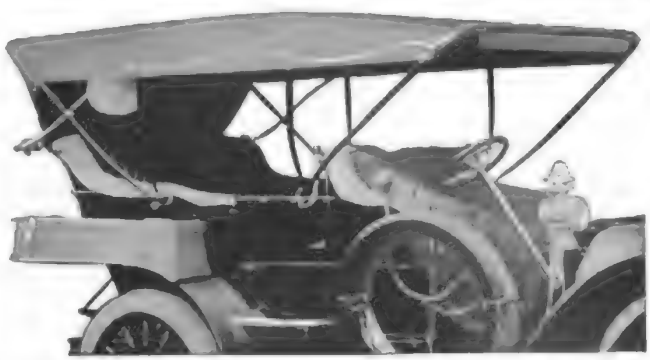
Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.
Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.



WE CAN MAKE POOR TOPS **BUT DON'T**

LONDON TOPS are correctly designed for each model car—are built in the best possible manner to stand the wear and tear a top is subjected to. Heavy bows, reinforced, stayed and cross stayed, padded to give proper shape, front and back stay straps, with or without joints.

The Best Possible in Top Construction

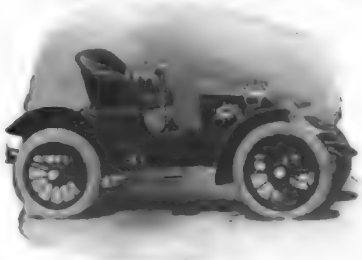
Each top has Detachable Roll Front, Front Side, and Side and Rear Curtains, with ample celluloid lights—ready to attach to cars.

London Auto Supply Co., 1229 Michigan Ave. CHICAGO

Digitized by Google

ADAMS-FARWELL

THE "REVOLVING-MOTOR" CAR



Our system is no longer an experiment, as our cars are now being operated every day by satisfied customers. In proof of this let us send you copies of letters received from owners of 1904 and 1905 models.

Three and five Cylinders—20-25 and 40-45 Horsepower
Six Models $2,000 to $4,000—Highest Grade Only

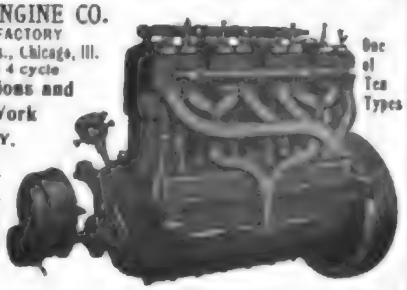
No Water: No Radiator: No Fly-wheel: No Muffler: No Fan: Automatically Governed

CHICAGO SALESROOM: 1536 MICHIGAN AVE.

THE ADAMS COMPANY, Dubuque, Iowa, U. S. A.

MOTORS — All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.



One of Ten Types

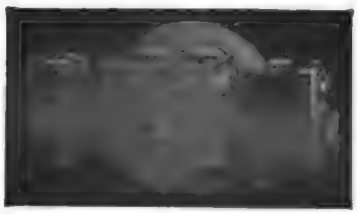
4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.

Telephone North 1601

VERTICAL AND HORIZONTAL

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors

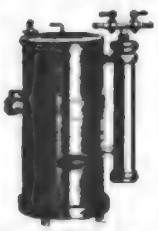


The A. Streit Machine Co.

CINCINNATI OHIO

COLUMBIA SEARCHLIGHTS and GENERATORS

Guaranteed to be better than most, and as good, if not better, than any



Model No. 1—6 in. Mirror Lens, 6 in. Opening
Model No. 2—6 in. Mirror Lens, 7 in. Opening
With Adjustable Burners

WRITE US

Generator No. 2—Capacity 32 oz. Will supply from one to four Burners. Equipped with a Condenser.

HINE-WATT MFG. CO., 58-60 Wabash Avenue, Chicago

MOSLER "SPIT-FIRE" PLUGS

They ACTUALLY "SPIT-FIRE" while others spark only

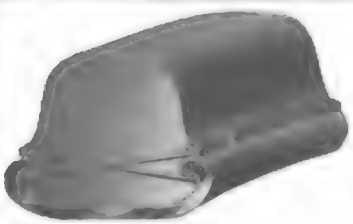
BASE { Facilitates Sparking. Makes Plugs Spit-Fire. Acts as Condenser of Electricity. Protects Insulation and Sparking Points.

STANDARD SIZE, $1.50, Postpaid. SPECIAL, $2.00.
With Patented Protector, $ 50 additional.

Used by the Leading Manufacturers.
INSIST upon Name and Patent Dates.
BEWARE of Valueless Imitations.

THE MOSLER TIMER
Is Constructed on a Scientific Basis.
WRITE FOR LIBERAL DISCOUNTS.

A. R. MOSLER 1679 Broadway NEW YORK



Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types
and made to fit any standard clincher rim in which pneumatic tires are used

OBSERVE THE FASTENING DEVICE

Tire Fastener for Ordinary Work

RESILIENT AND "THERE WITH THE WEAR"

The Motz Clincher Tire & Rubber Co.
AKRON, OHIO, U. S. A.

Digitized by Google

Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in.... WILKES-BARRÉ, PA.
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

HIGHEST GRADE ONLY

Aluminum Castings

THE ALLYNE BRASS FOUNDRY CO.
CLEVELAND AND DETROIT

A New Era in Carbureters

THE GARLLUS AUTOMATIC CARBURETER is a perfectly automatic carbureter, without a float, without compensater, easy to start, sure to run. So simple it cannot get out of order. Greatest economy. Highest efficiency. An easy starter on four cylinder engines. Money refunded if not satisfactory.

The Goddard Machine Co., Holyoke, Mass. says: "The GARLLUS CARBURETER gives a 10 per cent higher efficiency than any carbureter we have tried, producing in a test two h. p. more than the ..... and one h. p. more than the..... We believe in it thoroughly." (These were two prominent float feed carbureters.

For further particulars address
THE WINKLEY COMPANY, P. O. Box 243, Detroit, Mich.

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

REPAIRMEN

Our Winter SNAPS LIST of Sacrifices is now ready and goods are offered at sacrifice prices. Here are a few:

4½ H. P. Mobile Steam Engines.
5 H. P. Prescott Steam Engines.
14 and 18 in. Copper Steam Boilers.
Cadillac Front Axles.
Bevel Differential Gears.
Copper Fuel and Water Tanks.
New Tubular Running Gears.

And hundreds of other attractive lots of goods you need. Write us for the SNAPS lists.

Neustadt Auto & Supply Co.
826-830 South 18th Street, ST. LOUIS, MO.

"CRAWFORD" MOTOR CAR

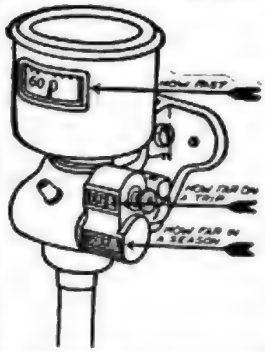
Price, $850

Manufactured by the originator of the well known "Crawford" bicycles

The High Powered Runabout for City and Country Use.
2 cylinder upright actual 10 h. p. Wheel base, 78 inch.
Ball bearings throughout.
2 speeds ahead and reverse controlled by one lever.
2 powerful foot brakes.
High grade workmanship throughout.
Write for catalog.

CRAWFORD AUTOMOBILE CO. Main Offices and Factory: Hagerstown, Md.
New Amsterdam Motor Transportation Co., 152 W. 58th St., Sole representatives for New York City and vicinity

Digitized by Google



THE AUTO-METER

for your new 1906 car

will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.** This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

THE LAMBERT

Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.

ANDERSON, IND.

Members American Motor Car Manufacturers' Association Chicago

Baldwin Automobile Chains and Sprockets

Best Material

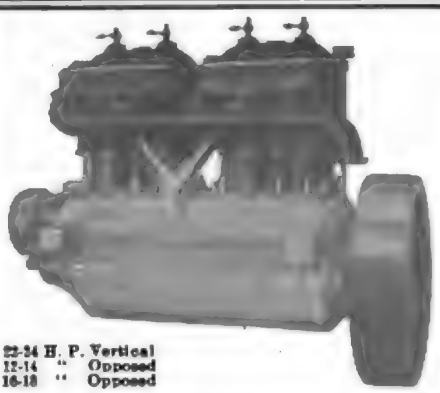
Accurate Construction

BALDWIN CHAINS AND SPROCKETS

SEND FOR CATALOGUE

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

E. Franklin Peterson, Western Sales Agent
166 Lake Street, Chicago, Ill.



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

Did Anyone Ever Hear

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

We have a full description of 1906 model ready to mail to you if you will send us your address. Will also mail booklet explaining performance of '06 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile Supply Co., Lim., Toronto; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.

Member A. L. A. M.

Northern

"Noiseless and Dustless"

7 h. p. Runabout . . . . . $ 650
16 h. p. Touring Car 1,700
16 h. p. Limousine (4 passengers) . . . 2,500

Northern Crank Case and Gear Case Combined

Are cast as an integral unit. This case which is an original Northern conception insures perfect alignment of all working parts and absolute protection from dust and dirt.

Three Point Motor Support

Each cylinder and the rear end of the gear case rest upon the frame. Even should the frame be distorted the alignment of gears and motor would not be altered. These are only two of many exclusive Northern advantages. Send for complete catalogue illustrating the entire line.

NORTHERN MFG. CO.
DETROIT, U. S. A.

Member Association Licensed Automobile Manufacturers.

A TIMELY WORD TO DEALERS

THE Model A GALE $500

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer Knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS
Galesburg, Ill.

MOLINE 1906

MODEL "A" 30-35 Horse Power. $2500.00

Four-cylinder, water-cooled motor. Interesting features—110-inch wheel base, 34-inch wheels with 4-inch tires, pressed steel frame, three speed sliding gear transmission, mechanical oiler, and large roomy body of handsome design.

MODEL "C" 18-20 Horse Power. $1750.00

Practically the same construction as above, except on a smaller scale. Four-cylinder vertical water-cooled motor, 100-inch wheel base, 32-inch wheels with 3 1-2 inch tires, neat new design of double side entrance body.

MODEL "G" 16 Horse Power. $1000.00

Double opposed motor under the body, plenty of radiation, lots of bearing area, new design of water pump, mechanical oiler, 86-inch wheel base, running boards at side, and detachable side entrance tonneau body.

Advance circular ready for distribution

Moline Automobile Co.
East Moline, Ill.

Digitized by Google

"SOOT-PROOF" WINS

Five Prizes Were Awarded to the Cars Using "Soot-Proof" Plugs

The "McMurtry" Prize for the car having the least ignition trouble was awarded to a Reo using "Soot-Proof" Plugs. These cars covered a distance of 700 miles during the National Economy Test of the New York Motor Club, October 30 to November 4, 1905.

These cars had absolutely no spark plug troubles, and the original plugs were used throughout the entire run. Thus again has the "Soot-Proof" Plug demonstrated its superiority, reliability and economy.

"SOOT-PROOF" in Name and Fact
Non-short-circuiting Self-cleaning

C. A. MEZGER
203 W. 80th St., NEW YORK

E & J MEANS

QUALITY In LAMPS

Lamp No 70

REGARDING YOUR
1906 LAMP EQUIPMENT

We Guarantee to Please You in Both Quality and Price. Write us.

Edmunds & Jones Mfg. Co.
318 Riopelle Street, DETROIT, MICH.

"GEECEE" BATTERY

THE ONLY NON-LIQUID STORAGE BATTERY IN THE WORLD.

"GEECEE" STORAGE BATTERY

An unequaled ignitor. Higher in capacity and voltage than any wet battery now on the market.

Acid (Electrotype) in suspended form. Can't spill or leak. Short circuit an impossibility.

National Sales Corporation
New York Sales Managers

Royal Battery Co.,
145 Chambers St.,
NEW YORK

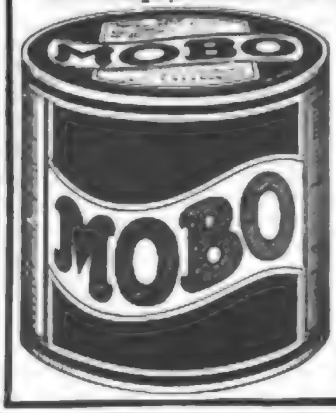
The Care *of the* Car

Washing the body of the machine, keeping the polished surface free from lubricator, road dust and gutter muck is just as essential to the life of an Automobile, as is the attention given the running gear.

Mobo, the new cleanser for Automobiles, will easily and quickly remove grease, dirt and grime and all traces of a hard run, without dulling or scratching the highly polished surface.

MOBO

is unlike common soap, as it positively contains no free alkali. Being a preservative as well as a cleanser, it prevents varnish or paint from peeling or cracking, and adds a fine gloss to the surface.



Mobo may be used with profit on leather goods, harness or woolen fabrics. Cannot harm the most sensitive skin, as it is a purely vegetable oil preparation and absolutely contains no free alkali. Put up in 2-lb. and 8-lb. cans; also in tubs, half barrels and barrels.

If your supply man does not keep *Mobo*, send us his name and address, and we will see your wants are supplied.

JOHN T. STANLEY
New York.

Digitized by Google

GARFORD TOURING CAR PARTS

The great problem of the hour for the automobile manufacturer is to develop the details of his engine. This study is so absorbing and important that the duty of producing axles and other parts has been left to other specialists.

Our specialty is the manufacture of parts for the very highest class of cars—parts that are as good as life insurance. We make:

REAR AXLE: Independent Shaft Drive, Ball or Plain Bearing, Weight Carried Entirely on Axle Tube

FRONT AXLE: I-Beam Section Nickel Steel Bed, Ball or Plain Bearing

CHANGE GEAR
STEERING GEAR
CLUTCH
DISTANCE ROD AND BRACKET
PROPELLER SHAFT
LEVERS FOR EMERGENCY-BRAKE AND CHANGE-GEAR

Parts of one size are suitable for cars weighing up to 2400 lbs. and of 30 h. p.

Parts of the other size are suitable for cars weighing up to 2800 lbs. and of 50 h. p.

Write for Circular No. 12.

THE GARFORD COMPANY, ELYRIA, OHIO

Sales Manager: HAYDEN EAMES, Cleveland, Ohio

THE

STANDARD AMERICAN COOLER

The Whitlock Cooler

Was used on the *Locomobile Racer that finished third in the Vanderbilt Cup Race.* It was never touched during the race. *It did its full* duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

Hartford ... Conn.

Latest European Novelties

RACING CAR
No. 13878

We are now importing a complete line of Mechanical Automobiles, including side entrance and rear entrance Touring Cars, Runabouts, Racing Cars, etc., which are mechanically operated with clock work and spring. Catalogue mailed on request.

No. 6361. Full Size.

AUTOMOBILE JEWELRY

We are now handling a line of Automobile Jewelry, consisting of watch charms, watch fobs, ladies' hat pins, in sterling silver and rolled gold plate; designed and copied from automobiles and automobile parts, such as lamps, horns, wheels, etc.

Catalog mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

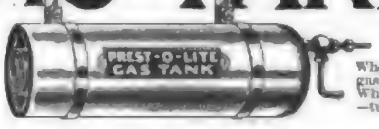
Home Office, 97-99-101 Reade St., New York City

BRANCHES

Broadway and 36th St., New York. 318-330 N. Broad St., Philadelphia
202-204 Columbus Av., Boston, Mass. 406 Erie St., Cleveland, Ohio

PREST-O-LITE GAS TANK

No Waste
No Odor
No Attention
Tips Never Clog
Nothing to Freeze



SIMPLE ENOUGH
When you want gas, turn it on. When you don't, —turn it off.

NEVER AFFECTED BY EXTREME COLD

Generators often give trouble from freezing up and also cause moisture to collect in the pipe line, which stops the flow of gas.

You won't find these troubles or any others with the Prest-O-Lite gas tanks.

Prest-O-Lite Gas Tanks are

ALWAYS READY FOR SERVICE

No time lost — No inconvenience — Write for booklet

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.

AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL.

Digitized by Google

No. 66
Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

Constant jarring over rough roads is hard on lamps, but it can't shake apart

The Neverout

Mirror Lens Searchlight

This strong projector is also the most powerful. The gas is furnished in the safest, cheapest and best manner by the new *Neverout*

Patent Safety Gas Producer

Built on an entirely new principle. Instantly lighted and extinguished without odor or waste.

Write for free illustrated catalogue.

ROSE MFG. CO.
912 Arch St. Philadelphia

THE AMERICAN
LITTLE WONDER DYNAMO

Has system of storage in the base; requires no other batteries for starting. If you desire a first-class machine at a low price, be sure and get the LITTLE WONDER.

AMERICAN COIL CO., Foxboro, Mass.

WRITE FOR 1906 CATALOGUE

Auto Supply Co., 1662 Broadway, New York Agts. Geo. B. Hill, 306 McAllister St., San Francisco, Cal.

Automobile Bows

ARE BEST

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio

MUD

FORGET IT AND USE
WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD

WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST.
NEW YORK CITY.

1905 · VESTA · 1905
Ignition Battery

4 Volt, 60 Amp. hours
9¼x3⅛x8¼. Price, $18.00
6 Volt, 60 Amp. hours
9¼x5⅝x8¼. Price, $27.00
8 Volt, 60 Amp. hours
9¼x7x8¼. Price, $36.00

Satisfaction Guaranteed by

VESTA ACCUMULATOR CO.

1336 Michigan Avenue, CHICAGO
Phone South 962

Eastern Agents, THE R. E. HARDY CO.
125 W. Broadway, New York

Veeder
ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

LATEST TYPE WILLARD LATEST TYPE
STORAGE BATTERIES

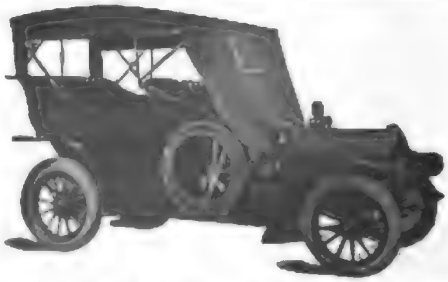
Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

Digitized by Google

WITHERBEE

Storage Batteries

Are guaranteed to give satisfaction or purchase money will be refunded

With our economy recharging outfit you can recharge your batteries either in your home or office. Write for descriptive pamphlet.

FOR SALE BY THE LEADING JOBBERS

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK

WE MANUFACTURE

Gilbert Automobile Fabric Supplies

We originated supplies of this nature, have many patents on them. We make nothing but the *best.* We take *pride* in the bright ideas brought out by our designer, and we back up these with materials of quality and fine workmanship.

Jobbers and Dealers. Our 1906 line will be ready December 1st; it will be a winner. If you don't catalog this line you will make a big mistake.

Don't ruin your *reputation* by handling *spurious imitations* of our goods. *That "just as good gag" is played out,* you don't want to have to use it.

We *advertise to your benefit.* Do the imitating pirates? *No!* We make high class goods. Do the above named gentry? *No!*

Our supplies sell for standard and fair prices. We protect you and the dealer. Do the imitators? *No!*

Well, an insurance investigating committee could not discover any demand for, or quality and originality in *"just as good"* kinds offered you by bearded gentry, from the sweat shop districts.

Now the public want the best. We make it, and if there is publicity and value in advertising we intend to see that they get what they want.

Will you give it to them?

THE GILBERT MFG. CO.

Electrotypes Ready — New Haven, Conn. — Catalog Ready

"TRY IT BEFORE YOU BUY IT."

THE IMPERIAL—WIXON

Compound Air Pump

A slight pressure on the handle creates a great pressure in the tube.
Capacity large; results quick.
Tire troubles cease once you secure an Imperial-Wixon.
Simple, compact, convenient.

$5.00 ON APPROVAL

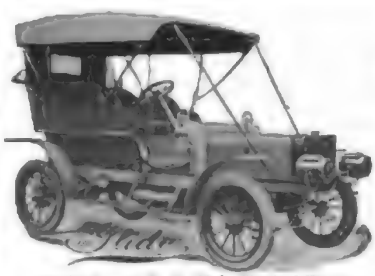
Ask any dealer or write us

IMPERIAL BRASS MFG. CO.

249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

Pat. allow



Model E. 30 H. P. Glide, Vertical Four-Cylinder Motor

1906 MODELS

Now Ready

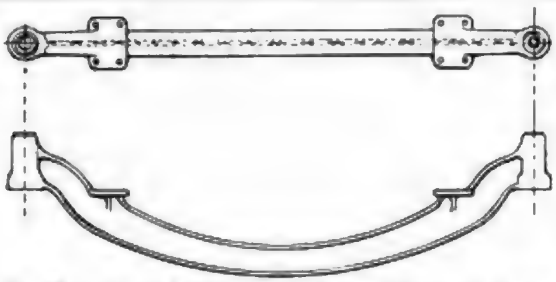
Model E is a 30 H. P. vertical four-cylinder car with bevel gear drive.

Model F is an 18 H. P. two-cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS

The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.

Chicago Representatives, Holmes-Schmidt Motor Co., 1502, Michigan Ave.



The Winton Front Axle Casting of Parsons' Manganese Bronze

Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp & Sons Ship & Engine Building Company

PHILADELPHIA, PENNA.

WRITE

TO

COLUMBIA LUBRICANTS CO., OF NEW YORK,

78 BROAD STREET, NEW YORK CITY,

FOR PRICES AND LITERATURE ON

MONOGRAM OILS AND GREASES

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St. NEW YORK, 69th St. & 8th Ave. PHILADELPHIA, 220 N. Broad St. BUFFALO, 640 Main St. ROCHESTER, 130 South Ave. BOSTON, 39 Stanhope St. DENVER, 1440 Clarkson St. SAN FRANCISCO, 636 Howard St. CHICAGO, 204 E. Lake St. ST. LOUIS, 3044 Olive St. ST. PAUL, 372 Minnesota St. DETROIT, 205 Jefferson Ave. PITTSBURG, 5905 Centre Ave. SAVANNAH, 209 Bull St. MINNEAPOLIS, 3d Ave. S. & 8th St. PASADENA, 33 S. Raymond Ave. PORTLAND, ORE., 140 Fifth St., N.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

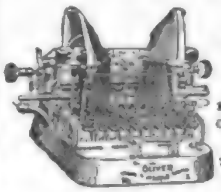
Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

We Want Agents for the OLIVER Typewriter

—the standard visible writer—

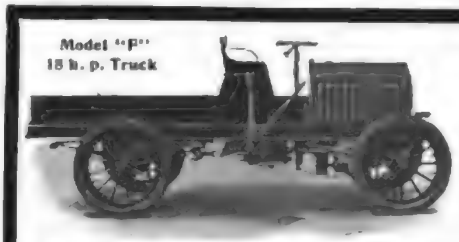
in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.



WOLVERINE F

2-cylinder opposed motor under bonnet, bevel gear drive.

Price, $1,200

WOLVERINE AUTOMOBILE & COMMERCIAL VEHICLE CO.

Dept. C. DUNDEE, MICH.

Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works: Waverly Park, NEWARK, N. J.

New York Office, 74 Cortlandt Street

Auto Top Bronzes

Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.

C. W. COOPS CO.

3 Appleton St., Boston, Mass.

SPRINGFIELD TOPS

3, 4, and 5 Bow Aluminum Bodies

Springfield Metal Body Co. 22 Birnie Ave. Brightwood SPRINGFIELD, MASS.

THE SOLVAY PROCESS COMPANY'S "KAL-KRYSTAL"

makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses

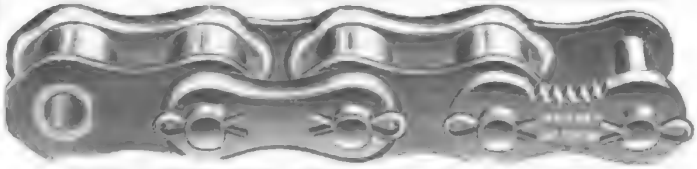
CARBONDALE CHEMICAL CO.

739 UNITY BLDG., CHICAGO

Buy A WAYNE

and save all arguments

The Old Reliable



"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google

OLD Tires Made NEW
New Tires Made Puncture-Proof
NEWMASTIC FILLING
For Clincher and Single Tubes
Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn
NEWMASTIC TIRE CO.
1393 Michigan Ave., CHICAGO, ILL. Tel. South 1361
ST. LOUIS, MO.

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy** and **satisfaction** in having such work done outside of the city.
W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 371 Wabash Ave.

REST YOUR TIRES with the **"Springfield" Auto Lift**

Showing Lift in Position to Receive Car.
'on turn the cranks and the four wheels will raise 7 oches off the floor. Write for description and price.
. J. DAY & CO., Pacific Coast Agents, San Francisco
'HE SHAWVER CO., Springfield, O.

S YANKEE GRADE METER. PRICE $7.50.
This Grade Meter is the handsomest article of its l on the market, and is positively accurate. No ation of the indicating hand.
NKEE MICA SPARK PLUG. PRICE $1.50.
Double Insulation, Compression End, Rigid Points, d reliable and popular Plug on the market. 40,000 last year. Guaranteed 90 days.
Everything for the Automobile. Mammoth log for 10 cents in stamps.
J. WILLIS CO., 7 Park Place, New York

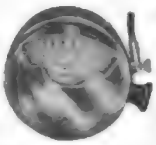
WE ARE SOLE IMPORTERS OF
IEUPORT IGNITION OUTFIT
The Best in the World.
agnetos, Coil, High Tension Distributor, Nieu- rt Spark Plug, Storage Battery, Ignition Wire
BERT CHAMPION CO., 541 Tremont St., Boston, Mass.

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX
FAYETTEVILLE, N. Y.

TEEL CASTINGS
R AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
LWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

A Glance Tells You

That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.
SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.
Direct factory representatives: K. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

"KENT POCKET METERS"

Accuracy Guaranteed
Volt-Am-meters, 0-5V., 0-20A., Price $6.00.
Volt meters, 0-5V., $5.00.
Ampere meters, 0-20A, $5.00.
Discount to trade.
ATWATER KENT MFG. WORKS
115 N. 6th St. Philadelphia, Pa.

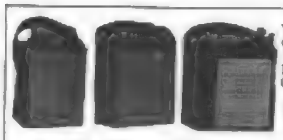
SPROCKETS
Chains and Differentials
CULLMAN WHEEL CO.
1021 DUNNING STREET, CHICAGO, ILL.

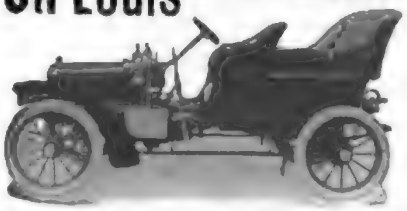
Use Rhodes Calcium Chloride for Non-Freezing Solution in Autos. After dissolving 6½ lbs. of Rhodes' Calcium Chloride to a gallon of water the solution will not freeze until 27 degrees below zero is reached. Extensive experiments have proven that it will not rust or affect your engine in a harmful way.
Rhodes' Calcium Chloride does not evaporate or precipitate under any conditions. Packed in sealed cans: 10 lb. cans at 10c. lb. 50 lb. cans at 6c. lb. 100 lb. cans at 5c. lb. Send cash with order. Shipments from New York or Chicago warehouses. Write us for further information. **James H. Rhodes & Co.**, 117 E. Kinzie St., Chicago, Ill.

"SOLDERENE"
A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.
Sample 10c. Dealers Write for Price.
CHAS. A. THOMPSON CO.
39 Cortlandt Street New York City

For Thanksgiving Day
the Nickel Plate Road will sell tickets, within distance of 150 miles, November 29 to 30, at rate of a fare and a third for the round trip. Return limit December 4. Three through trains daily to Ft. Wayne, Cleveland, Erie, Buffalo, New York, Boston and New England points. No excess fare charged on any train on the Nickel Plate Road. Standard equipment on all trains. Meals served in Nickel Plate dining cars on American Club Meal Plan ranging in price from 35 cents to $1; also service a la carte and mid-day luncheon, 50 cents. Chicago depot, La Salle and Van Buren streets, on the Elevated Loop. Telephones Central 2057 and 6172.

MOTOR AGE
CONTAINS WEEKLY THE
Best Budget of Automobile News in the World
Subscription $2.00 A Year


Voltage—4, 6 and 8
Capacity—
23 Amp.—Hours
Prices—$6, $9, $12
Other styles—
$3.25 to $32.00.
Established 1889
Catalogues on Request.
AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

St. Louis 18-22 30-34 **Actual H.P.**

"RIGS THAT RUN"—We Make Them
ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS PEORIA, ILL.

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

DIAMOND WRAPPED TREAD TIRES
DIAMOND RUBBER CO., AKRON, OHIO

Graphite for the Motor
DIXON'S GRAPHITE
Motor Lubricants
Interesting booklet and samples FREE.
Joseph Dixon Crucible Co.
Jersey City, N. J.

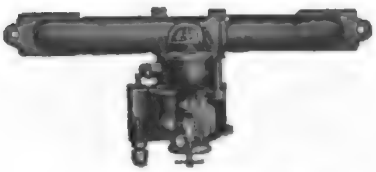
MOTOR CAR SPECIALTIES and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

Eclipse Pocket Ammeter
For General Battery Testing
0 to 20, 0 to 30 Amperes.
"Ready to use", with short, flexible cord attached. Can be used in any position and works in either direction of current. Provided with a neat kid leather case for carrying.
Eldredge Electric Mfg. Co.
Springfield, Mass. U. S. A.

Special Design Finest Quality Built to Order
BODIES AND TOPS
C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1906 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD

AND

FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1297

1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1312 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions 'PHONE SOUTH 1042

1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1900 agency goods now coming in—Motsinger 4-cyl. 30h. p. side entrance, new $1250; Moline, 2-cyl. 12 h. p. side entrance, new, $900; Hoffman 10 h.p. touneau, new, $400; Murray runabout, $200; Oldsmobile, $250; Buckboard, $200; Gale, 8 h. p. new, $350; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Prayer-Miller" "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1241-1245 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

EVERYTING IN AUTO SUPPLIES

FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1328 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

REO

SEND IN APPLICATION

RALPH TEMPLE

309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.

138 to 146 North Broad St., PHILADELPHIA

OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO

The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.

The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for

Thomas Flyer, Stevens-Duryea, Orient, Pierce-Arrow, Oldsmobile, Buick

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY

ORLANDO F. WEBER CO.

(INCORPORATED)

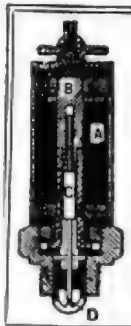
Distributors for

CHICAGO and MILWAUKEE

1322-26 Michigan Ave. Phone 1099 South

331-35 Fourth St. Phone 3781 Main

Digitized by Google



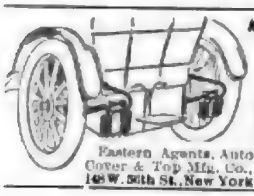
LOW TENSION MAGNETO

THE GARON SYSTEM OF IGNITION

Combines all the good points of **the Jump Spark and Make and Break**, and is perfectly reliable. Easily applied to any engine, whether originally built for jump spark or make and break ignition.

Absolutely guaranteed *Let us show you how perfectly it works*

ASTER CO., 1591 Broadway, NEW YORK CITY



Absorbs all vibration

The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

Eastern Agents, Auto Cover & Top Mfg. Co., 148 W. 58th St., New York

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

STORM APRONS

Runabout size, 2 openings	$7.50
Tonneau size, 4 openings	11.00
Touring Car size, 5 openings	13.50
Capes, 1 opening	2.00

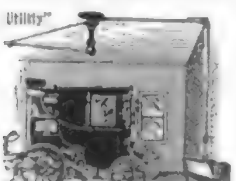
Our Storm aprons are made of heavy-weight rubber cloth with plaid back. Prices include fastenings for attaching to any machine. Terms—Cash with order. Money back if you are not satisfied.

Weed Chain Tire Grips

Send us the size you need and we will quote you a low price.

Mr. Dealer: Write us for our "Special Deal" on above goods.

THE BALL-FINTZE CO., Newark, O.



Overhead Washing Machines

A Time, Labor and Money Saver.

For Public and Private Garages. No garage is complete without them.

Send for descriptive pamphlet and prices.

A NECESSITY TO EVERY AUTOMOBILE OWNER

THE H. NICKOLSBERG MFG. CO., 68 Dey Street, NEW YORK

Lobee Gear Pump

Well adapted for Oldsmobile and other makes. Works with any type of radiator. Easily attached. Write for prices.

LOBEE PUMP CO.,
240 Terrace, Buffalo, N. Y.

C. E. Miller, Agent,
97 Reade St., New York

A. L. Dyke Automobile Supply Co.
4703 Olive St., St. Louis, Mo.

Every Storage Battery Needs Juice

Why not make your own juice as you need it, and keep your batteries full?

THE APPLE AUTOMATIC BATTERY CHARGER will do this for you. Thousands of "Auto" owners are using it successfully. Not an experiment, but a tried success. See us at New York and Chicago Auto Shows. Write to-day for full information.

The Dayton Electrical Mfg. Co., 75 Beaver Bldg., Dayton, O.

For Boiled Down Information About

AUTOMOBILES in general & WELCH CARS in particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.
Factory, Pontiac, Mich.

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

Your $5.00 Back

if after 30 days' trial you don't feel absolutely sure the

SKINNER COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

Compact, light and convenient for carrying.

$5 Express Prepaid

SKINNER & SKINNER
Mfrs.
4134 Indiana Avenue
CHICAGO

Reference: Illinois Trust & Savings Bank, Chicago

Garlick Auto Props

CUSHIONED TOPS

Use the Garlick Auto prop. It is cheap, strong and durable, and lengthens the life of a tire; keeps it right and proper. Better than hanging them on the wall. Will fit any machine, any weight. Send height of axle, from the floor, and price as below and we will send, express prepaid, to any part of U.S.

A—$2.00 set of 4

5 inch lift

Adjustable
B—$3.50 set of 4

GARLICK AUTO PROP CO.
Madison Ave. and Broadway, Paterson, N. J.

EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

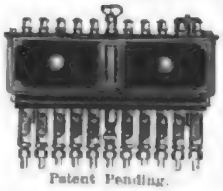
A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS

ST. LOUIS, MO.

ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



Patent Pending.

An automatic pressure feed oiler, instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

FOR $2 PER YEAR

READERS OF

MOTOR AGE

Receive 1560 pages of interesting mechanical descriptions and touring hints

WHERE CAN YOU BEAT THIS?

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our Long Distance Gasolene Storage System "Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., N. V. Ft Wayne, Ind

CHAIN TOOL

35c

THE HUSKY KIND

SENT PREPAID FOR 45c

THE MOTOR CAR SUPPLY CO.

1427 Michigan Avenue CHICAGO, ILL.

NEW CAT. READY

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building :: :: Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 301 JACKSON BOULEVARD, CHICAGO

Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

People Say The U. S. Is Best

Lifts any car. Quick Acting. Cannot Break. No Loose Parts. No Rattle.

PRICE TO INTRODUCE, $2.25

Guaranteed. Patent Applied For.

THE U. S. JACK CO.

352 S. Claremont Ave. CHICAGO.

Motor Age

Subscription Price

$2.00 per Year

309 Michigan Avenue :: Chicago

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation does it side)

Packed only in 10-lb. cans. Price $2 each

Discount to dealers in case lot of 12 cans

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.

105 WALKER STREET NEW YORK

THE USE OF

NON-FLUID OILS

Means: Cool bearings, small oil bills, less wiping down, entire satisfaction—that's all! If your dealer cannot supply you, please write us for free sample.

N.Y.&N.J. Lubricant Co. 14 Church St., New York 29 9th St., San Francisco

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vesey Street, NEW YORK CITY

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company

Pittsburgh, Pa.

The IGNITION PROBLEM is SOLVED

in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No Batteries. No Coil. No Commutator.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 42th St., N.Y.

ROBERT VOLT - AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

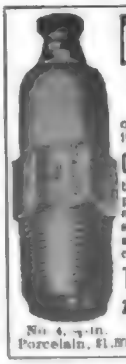
3-VOLTS 6-VOLTS

30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.

63 Shelby St. Detroit, Mich.



Sta-Rite

DEALERS

Do not buy spark plugs of half a dozen concerns, it isn't necessary.

Condense Your Orders

thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1906, price list.

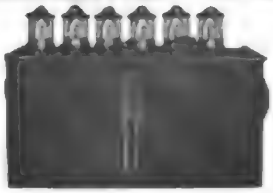
The R. E. Hardy Co.

225 W. Broadway, N. Y.

No. 4, ¾-in. Porcelain, $1.20 P. J. DASEY 453 Wabash Ave., Chicago No. 34, ¼-in. Mica, $1.75

Force Feed Lubrication

Constant Sight Feed. No Liquids



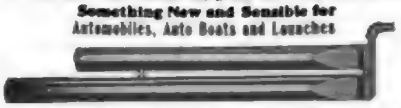
McCord & Co., 1402-80 Old Colony Bldg., Chicago

E. J. Day & Co., Pacific Coast Distributors 324-326 Golden Gate Avenue, San Francisco, Cal.

A PLEASURE TO HEAR

THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.

970 Hamilton St., Dept. B, CLEVELAND

New York Branch, 148 West 38th St.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

COOLERS FENDERS

HOODS TANKS

EASTERN FACTORY, NEWARK, N. J.

SOMETHING NEW

IN BOTH AIR AND WATER COOLED **MOTORS** WRITE US FOR PARTICULARS

FAST MCH. & TOOL WKS.

25th and Greenfield Aves. MILWAUKEE, WIS.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a Breech-Block requires just the same time, same tools, same effort, and one twist cleans the entire porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of its holder, and the gasket of copper drop with it. No digging!

It is nickeled inside and out. Highly polished and dust-proof. Sparks between two unprotected points and not between one point and the shell. Its points are protected.

Porcelains are hand turned and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of cheapness is left out of them.

Postpaid, Anywhere, $2.50. Booklet free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, Ill.

Digitized by Google

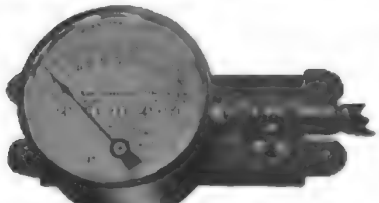
¶ The Automobilist who today doesn't include a Jones Speedometer in his list of accessories is eliminating two thirds of the pleasure of automobiling—and is encouraging the officer of the law to make his arrest.

¶ When the Judge says: "Did you have any *positive* means of determining the speed at which you were traveling?"—he is asking if your car was equipped with a Jones Speedometer. Don't forget that!

¶ The Mounted Officer with his primitive stop watch method of timing the Automobilist can seldom make a case. Guess work testimony doesn't go in court. The Officer means well, but his method is wrong.

¶ Our Speedometer Bulletin contains speed information and tells of our Protection Tag. Free on application.

JONES SPEEDOMETER
122 West 32d Street, - NEW YORK



Standard Roller Bearing Co.
STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles
Send for Catalogue. PHILADELPHIA

PACKARD ENAMELED IGNITION CABLES
NEVER DISAPPOINT
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?
PROOF AGAINST HEAT, GREASE, OILS and WATER
THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

Automobile Fluids

NON-FREEZING FLUID—Guaranteed. Thin as water. Cools as well as water. Circulates as well as water. Freezes at 35 below zero. No acid. Won't corrode or damage system in any way more than water.

RUBBER FLUID—Small Tube, 25c. ¼ pt., 75c. Guaranteed quicker and better than vulcanizing. Repairs casings as well as tubes. Hot roads won't affect patches. Don't throw away old casings when we furnish the canvas and fluid rubber.

BODY FLUID—Feeds the varnish, don't deaden it. Removes all scratches. Easily applied and makes body look like new. Special prices to dealers.

MARION FLUID CO., First & Adams Sts., Marion, Ind.

VALVELESS-PUMPS
WITHOUT STUFFING BOXES OR SPRINGS
All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue
Madison-Kipp Lubricator Co., Madison, Wis.

Peerless Automobile Jacks
Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 tons, height 10 inches, rise 7 inches, weight 4½ lbs., price $ .50. Express prepaid in the United States. OLIVER MFG. CO., 205 S Desplaines St., Chicago, Ill.

MAT'S BODY POLISH
Prevents the Finish from Cracking or Staining
Used by the Chicago Garages. Send for sample.
$2 PER GAL. MAT. WEIS
1412 Michigan Avenue, CHICAGO

If You Are a Judge of Good Plugs
so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS
Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1908 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 3 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

Electric Signs
Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.
U. S. ELECTRIC SIGN CO., Muncie, Ind.

Subscribe for Motor Age
Two Dollars a Year

THE HAM
GOLD BLAST
AUTO LAMPS
"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:
Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:
Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

MR. AUTOMOBILIST:
Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS

because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET

C. T. HAM MFG. CO.
ROCHESTER, N. Y.

Digitized by Google

See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

THE BILLINGS & SPENCER CO.
HARTFORD, CONN.

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. in the papers, you will recognize them by their lack of arguments. Their products have no special merits, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

WHAT WE HAVE:

The HERZ TIMER—16 models, to fit any make of motor: Remember: It's TOOLATEEL vs. TOOLATEEL.
Bougie Mercedes—double stone.
Herz-Distributor—1 coil for all cylinders.
Guenet Coils. Carpentier-Interrupter.
New prices—Single, $16; double, $20; triple, $28; quad, $30.

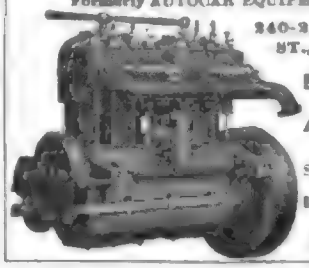
A line of switches of original design; contacts dust-proof covered.
Detachable terminals.
Wire terminals with groove.
Special ignition cables and wires.
Everything for the ignition.
One grade: The Best.

HERZ & CO. Civil Engineers
187 Elm Street, New York
Write for free Vademecum of Ignition.

CONTINENTAL MOTORS

Transmissions, Clutches, Carburetors, and Accessories are manufactured and sold only by

CONTINENTAL MOTOR MFG. CO.
Formerly AUTOCAR EQUIPMENT CO.



240-244 W. LAKE ST., CHICAGO

BEWARE OF IMITATIONS

Also Marine Reverse Gears and Propellers. Send for Catalog.

E. FRANKLIN PETERSON
Direct Factory Representatives.

HUSSEY DROP FORGINGS
AND UNIVERSAL JOINTS

Used by the largest American manufacturers. Get our estimates on all kinds of automobile work.

HUSSEY DROP FORGE & MFG. CO.
2020 Axtell Street CLEVELAND, OHIO

CHICAGO
and
CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

MONON--C. H. & D.

Ride this way once and you'll ride again—we think.

Chas. H. Rockwell, Traffic Manager
Frank J. Reed, Gen'l Pass. Agt.
CHICAGO

MOTOR AGE
GETS THE NEWS
300 Michigan Ave., Chicago

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

1904 WINTON—First check of $1,200 takes this car; fine condition; revarnished this spring; upholstering good; two gas and three oil lamps; with canopy top, glass front and curtains. All tires new this spring, with two extra casings and four inner tubes. Owner has just put in new crank shaft, fly wheel, main bearings, high speed gear, reverse gear, sprocket, chain, rear axle and bearings, rear axle frame, cones and bearings in front, carburetors, batteries and sight feed oiler on dash. Has extra chain and sprocket, side baskets and complete tool outfit. Best reason for selling. Practical demonstration at any time. Address C. R. Bowersox, Bryan, O.

FOR SALE—Olds $650 runabout. Has not been run over 50 miles; in fact, is a new machine, latest model, for which I have no use. Machine is all right, but was taken in trade. Price $500. Guaranteed as represented. Guarantee, care MOTOR AGE.

FOR SALE—Two 1905 Ramblers, Type 1. Have been handled with care and are in A1 condition. Owners have purchased 4-cylinder cars of same make. $900 each. T. G. Owen, Newport, R. I.

FOR SALE—Buffalo Electric in first class order. Does not need refinishing. Tires show little wear. Battery in good condition. Will be sold at one-third cost. Write for price. C. J. Bousfield, Bay City, Mich.

1905 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror lens headlights and generator; baskets, autometer, electric light for gauges. Address Box 267, Portland, Me.

FOR SALE—8 H. P. Olds engine in runabout car. 2 new Morgan & Wright tires. $250. Box 143, Cayuga, Ind.

BARGAINS while they last. New 2 H. P. marine engine, $60; new 6 H. P. 2-cylinder marine engine, $165; new 4-cylinder marine engine, only $300; fully guaranteed. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago, Ill.

FOR SALE—Seven horsepower runabout, in perfect order; cheap. T. E. Lutz, Galion, O.

FOR SALE—Cadillac, 1904 Model "A," tonneau; newly painted; guarantee good condition. Capen Motor Car Co., St. Louis, Mo.

WE HAVE a brand new Baker Imperial and a Baker Stanhope, slightly used for demonstrating. We are not going to handle electric cars the coming season and will sell these at less than cost. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

FOR SALE OR TRADE—One Cadillac tonneau car, specially built; Rushmore searchlight; extra inner tube; run very little; will demonstrate. Reason for selling, have two cars. Will trade for buckboard. Address Box 297, Portland, N. D.

PACKARD Model N, 1905, top, glass front, headlights. As good as new in every respect. $3,000. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

FOR SALE—35-40 H. P. Haynes-Apperson 4-cylinder touring car, 1905 Model. Delivered in July and used very little. In perfect condition. Fitted with extension top and plate glass front. Cost, complete with Prestolite tank, lamps, etc., $3,200. Will sell for $2,000. B. W. Kirshbaum, 207 West Washington St., Indianapolis, Ind.

WANTED—To purchase 1905 White Steamer. Must be in good condition. State lowest price. T. G. Gordon, 1240 Louisiana Ave., New Orleans, La.

RAMBLER—Model H, purchased in March; car is in good running order; has had good care; tires new or retreaded except one; three extra inner tubes; 7-inch Solar searchlight and generator; set Weed's tire chains; Gilbert cover for two persons; two oil sidelights and tail light; pump, jack and tools; have hauled four people 150 miles per day in this car; reason for selling, want surrey Type 1, same make. Price for immediate sale, $550; will demonstrate at any time. E. B. Tucker, Mattoon, Ill.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price $1,000. Ralph E. Clarke, Coldwater, Mich.

LIGHT RUNABOUT—A special built Rambler, new last spring, just entirely overhauled and repainted, body dark red, yellow running gear. Snap for quick cash. Owner has bought larger Rambler. "Runabout," 815 Main St., Keokuk, Ia.

ONE MOTOR CYCLE FRAME, complete with tandem attachment, $18. Herman Kaskel, Spencerville, O.

FOR SALE—Orient buckboard, fine shape, tires hardly scratched, for $150. A bargain. Asheville Auto Co., Asheville, N. C.

Digitized by Google

WANTED!

Bids on fifty motors, fifty transmissions, (sliding gear) and fifty rear axle equipments, completed and assembled to our specifications and patterns. Will contract in part or whole. Blue prints submitted on request. Mention facilities for prompt performance of contract. Box 40, care Motor Age.

Logan

A Two-Cylinder
Opposed
Air Cooled
Success

Sliding Gear
Transmission
Chain Drive

That Car of Quality

THIS light delivery car is ready. By ready we mean an honestly tested and perfect machine. It is built from the ground up for delivery purposes and is exactly what all merchants and manufacturers need, namely a light, quick and reliable delivery car that will carry 1500 lbs.

Write for catalogue A 11-4 and detailed information.

Logan Construction Co., Chillicothe, Ohio

WHITE 1905 Model, slightly used for demonstrating, in first class condition, $1,500. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

FOR SALE—Model A Winton; run 500 miles; fully equipped; bargain for quick sale. C. E. Wilkins, Omaha, Neb.

1905 Model 6 C curve dash Olds; new paint and tires; just as good as new and looks it; top with it. K., care Motor Age.

PACKARD, 15 H. P., automobile, $200; complete with all accessories, lamps, horn, extra tires; in first class running condition. A. J. Houle, South East St., Holyoke, Mass.

FOR SALE—One 40 H. P., 1905, up to date Thomas Flyer. Has had the best of care and is as good as new. Extension top, glass front, 6 fine lamps, including 3 in swivel searchlight. Prestolite tank and Jones speedometer. Speak quick. Barclay Auto Co., 248-50 Third Ave. S., Minneapolis, Minn.

1903 Winton; completely overhauled; worn parts replaced; new paint; new 4½-inch rear tires; side baskets, etc.; $650. L., care Motor Age.

FOR SALE—Olds runabout in good condition; consider no trade; a bargain at $275. R. M. Walker, Monroe City, Mo.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—Packard model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,000 if taken at once. Bates-Odenbrett Auto Co., Milwaukee, Wis.

FOR SALE—Single cylinder, 8 H. P. gasoline touring car; excellent condition, speedy and good hill climber; $300 cash or will trade for real estate. F. G. Hodell, 24 Cooper St., Cleveland, O.

WILL TRADE quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

FOR SALE—Garage established with Winton and Cadillac agencies for 1906 at Spokane, Wash. Fine location and a good storage business. Will sell at invoice or will consider partnership. Address G. W. Miller, Broadway and Madison Sts., Seattle, Wash.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—Detachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 20 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

1906 Olds, Model B; curve dash; blue and yellow; used but little. M., care Motor Age.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

FOR SALE OR TRADE—2 sections, 1,280 acres of good ranch land in Presidio county, Texas; will trade for automobiles. Alliance Motor Car Co., Alliance, Ohio.

FOR SALE—6 H. P. air cooled motor, $75; 10 H. P. water cooled motor, $85, new; 15 tube radiator, $10; hood, $12; McCanna 4 feed lubricator, new, $15; No. 10 Rose headlight, $12. Any of these parts sold separately. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

1905 Model B Pope-Hartford; new; never used; $500. N., care Motor Age.

AUTOCAR, seats 4 people, in best of condition, for sale or exchange; merchandise preferred. G. Knabe, Apollo, Pa.

FOR SALE—1904 Winton with canopy top, plate glass front, 4 lamps and tools complete; guarantee perfect order; sell for $1,000. Wm. T. Sigler, Piedmont, W. Va.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

1905 Model R Pope-Hartford, used but little; in A1 condition; $450. J., care Motor Age.

FOR SALE—Late 1905 standard Oldsmobile runabout, with rear seat, traveling box, boot, storm apron and horn. Cost, with extras, $700. In prime condition. First $550 takes it. Hamlin Barnes, Wellsville, O.

WANTED—Two first class automobile repairmen. Steady position to right parties. Address H. E. Fredrickson, 1502 Capitol Ave., Omaha, Neb.

FOR SALE—Autocar runabout, excellent condition, $350; can be seen in Chicago any time. Address Box 15, Motor Age.

When Your Motor No Longer

Handles the load, don't buy a new machine, but send motor to us. We know how to fit pistons and thoroughly overhaul motors. McCadden Machine Works, St. Cloud, Minn.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Toledo steam automobile; two 16" fire tube boilers. Wanted, one White flash boiler and a four-cylinder marine engine. Spencer Bros., Charleroi, Pa.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.

661-673 Beaubien St. DETROIT, MICH.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our **Tom Tire Pump** fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

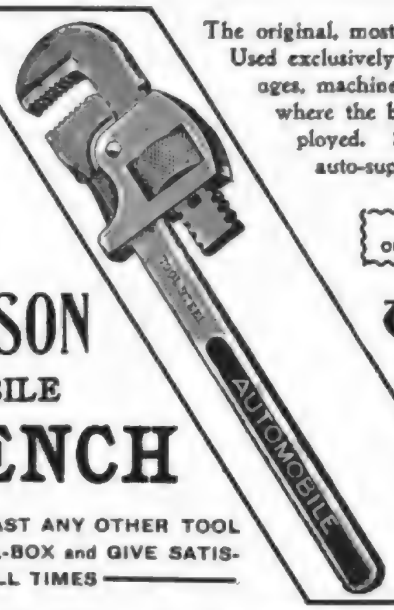
NYBERG AUTOMOBILE WORKS, CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

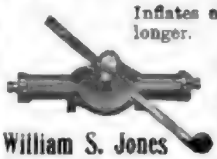
Walworth Mfg. Co.
Boston
Mass.
U. S. A.

This is NOT
A FAIRY TALE
We guarantee to increase the spark in your cylinders by
ONE HUNDRED PER CENT
Through our PATENTED
Steel Armored Ignition Cable
Adopted by the Leading European Firms
It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!
HERZ & CO., Civil Engineers 187 Elm St., New York
The largest manufacturers of Ignition Material in America.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers
We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.
AUTO DIRECTORIES CO., 108 Fulton St., New York City

Diamond Chains
Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.
DIAMOND CHAIN & MFG. CO., Indianapolis

LEA TIRE PUMP
Inflates evenly. Tires last longer. "Lea" takes the work out of pumping, too.
Our book B fully describes it. Write for it and ask for proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co.. 84
Adams Company 72
Adland Motor Co. 82
Allyne Brass Foundry Co. 73
American Ball Bearing Co. 71
American Battery Co. 81
American Coil Co. 78
Apperson Bros. 78
Aster Co. 83
Atwater-Kent Mfg. Works 81
Auto Brass & Aluminum Co. 84
Auto Directories Co. 87
Automobile Equipment Co. 81

Badger Brass Mfg. Co. 71
Baker Motor Vehicle Co. 66
Baldwin Chain & Mfg. Co. 74
Ball-Fintze Co. 83
Bartholomew Co. 79
Beaver Mfg. Co. 74
Billings & Spencer 86
Blomstrom, C. H., Motor Co. 42
Boston Auto Gage Co. 80
Bowser, S. F., & Co. 84
Briscoe Mfg. Co. 84
Brown, S. N., & Co. 78
Brown, W. H. 80
Buckeye Mfg. Co. 74
Byrne-Kingston Co. 64

Cadillac Co. of Illinois 52
Cadillac Motor Car Co. 57
Canedy, Earl 84
Carbondale Chemical Co. 80
Carr, F. S. 70
Champion, Albert, Co. 81
Chicago & Alton Ry. 83
Coey, C. A., & Co. 82
Columbia Lubricant Co. of New York 79
Continental Caoutchouc Co. 65
Continental Engine Co. 72
Continental Motor Mfg. Co. 85
Coops, C. W., Co. 80
Corbin Motor Vehicle Corporation. 40
Corwin Mfg. Co. 68
Cramp, Wm. & Sons, Ship & Engine Building Co. 70
Crawford Automobile Co. 73
Cullman Wheel Co. 81

Davis Robe Co. 83
Dayton Electrical Mfg. Co. 83
Dayton Motor Car Co. 58
Diamond Chain & Mfg. Co. 87
Diamond Rubber Co. 81
Dixon, Jos., Crucible Co. 81
Dyke, A. L., Auto Supply Co. 83

E. H. V. Co. 85
Eclipse Buggy & Mfg. Co. 84
Edmunds & Jones Mfg. Co. 76
Eldredge Electric Mfg. Co. 81
Electric Storage Battery Co. 90
Electric Vehicle Co. 70
Elmore Mfg. Co. 66
Excelsior Supply Co. 83

Fairmount Engineering Works. .. 82
Fast Machine & Tool Co. 84
Firestone Tire & Rubber Co. 61
Fisk Rubber Co. 66
Ford Motor Co. 54
Franklin, H. H., Mfg. Co. 39
Frazier, W. S., & Co. 81

G. & J. Tire Co. 60
Gabriel Horn & Mfg. Co. 84
Garford Company 77
Gilbert Mfg. Co. 79
Gilbens Bros. Co. 82
Goodrich, B. F., Co. 56
Goodyear Tire & Rubber Co. 66
Gray-Hawley Mfg. Co. 80

Ham, C. T., Mfg. Co. 85
Hardy, E. B., Co. 84
Hartford Rubber Works Co. 64
Hartford Suspension Co. 84
Haynes Automobile Co. 67
Hess & Co. 86-88
Hine-Watt Mfg. Co. 72
Hofeller Brass Fdy. Co. 83
Hoffheimer Soap Co. 69
Holley Bros. Co. 82
Hussey Drop Forge & Mfg. Co. .. 66
Hyatt Roller Bearing Co. 88

Imperial Brass Mfg. Co. 79
Imperial Wheel Co. 69
Importers' Co. 82

Jackson Automobile Co. 67
Jeffery, T. B., & Co. ..... Cover
Jones Speedometer 85

Kimball, C. P., & Co. 81
Knox Automobile Co. 71
Kokomo Rubber Co. 69

Leather Tire Goods Co. 81
Lester, E. F. 81
Link-Belt Machinery Co. 61
Lloyd Iron Roofing & Paint Co.. 70
Lobee Pump Co. 83
Locomobile Co. of America 45
Logan Construction Co. 87
London Auto Supply Co. 71
Long-Turner Mfg. Co. 67

McCord & Co. 84
McDuffee Automobile Co. 82
Madison-Kipp Lubricator Co. 88
Marion Fluid Co. 85
Matheson Motor Car Co. 73
Maxwell-Briscoe Motor Co. 60
Mead Motor Co. 83
Meager, C. A. 76
Michelin Tire, American Branch.. 62
Miller, Charles E. 77
Miller Signal Co. 84
Milwaukee Steel Foundry Co. 81
Mitchell Motor Car Co. 40
Moline Automobile Co. 75
Monon Route 86
Morgan & Wright ..... Cover
Mosler, A. B. 72
Motor Car Equipment Co. 74
Motor Car Specialty Co. 88
Motor Car Supply Co. 84
Mots Clincher Tire & Rubber Co. 72
Mutty, L. J., Co. 84

National Motor Vehicle Co. 55
National Spring & Wire Co. 84
Neustadt Automobile & Supply Co. 78
Never-Miss Spark Plug Co. 85
Newmastic Tire Co. 81
N. Y. & N. J. Lubricant Co. 84
Nickel Plate Railway 81
Nordyke & Marmon Co. 44
Northern Mfg. Co. 75
Nyberg Automobile Works. 87

Olds Motor Works 43
Oliver Mfg. Co. 85
Oliver Typewriter Co. 80

Packard Electric Co. 85
Packard Motor Car Co. ..... Cover
Pantasote Co. 63
Pardee-Ullman Co. 82
Pedersen, J. T. 83
Pennsylvania Railway 46
Pennsylvania Rubber Co. 63
Peerless Motor Car Co. 51
Pierce, Geo. N., Co. ..... Cover
Pittsburg Reduction Co. 84
Pope Mfg. Co. ..... Cover
Post & Lester Co. 58
Prest-O-Lite Co. 77

Quaker City Automobile Co. 82

Railway Appliances Co. 84
Rainier Co. 46
Rhodes, James H., & Co. 81
Robert Instrument Co. 84
Rose Mfg. Co. 78
Royal Battery Co. 76
Royal Motor Car Co. 75
Rubay, Leon 84
Rubber Goods Repair Co. 82
Rushmore Dynamo Works. 88

St. Louis Motor Car Co. 61
Shawver Co. 81
Skinner & Skinner 83
Spicer Universal Joint & Mfg. Co. 81
Springfield Metal Body Co. 80
Standard Roller Bearing Co. 85
Stanley, John T. 76
Steel Ball Co. 69
Stevens, J., Arms & Tool Co. 41
Stoip Mfg. Co. 73
Strelt, A., Machine Co. 72
Supplementary Spiral Spring Co.. 83
Syracuse Aluminum & Bronze Co. 83

Temple, Ralph 82
Thomas, E. R., Motor Co. 53
Thompson, Chas. A., Co. 81
Trebert Gas Engine Co. 78

U. S. Electric Sign Co. 85
United States Automobile Co. 82
U. S. Jack Co. 84

Veeder Mfg. Co. 78
Vesta Accumulator Co. 78

Walworth Mfg. Co. 88
Warner Instrument Co. 69-74
Way Muffler Co. 80
Wayne Automobile Co. 80
Weber, O. F., Co. 82
Weed Chain Tire Grip Co. 78
Weiss, Mat 85
Welch Motor Car Co. 82
Western Tool Works 78
Weston Electric Instrument Co.. 80
Wheeler, F. H. 67
White Sewing Machine Co. 59
Whitlock Coil Pipe Co. 77
Whitney Mfg. Co. 80
Willard Storage Battery Co. 78
Willis, E. J., Co. 83
Winkley Co. 77
Winton Motor Carriage Co. 39
Witherbee Igniter Co. 79
Wolverine Automobile & Commercial Veh. Co. 80
Worthington Automobile Co. 62

Digitized by Google

MOTOR AGE

VOL. VIII NO. 22 CHICAGO, NOVEMBER 30, 1905 $2.00 Per Year

LONDON'S OLYMPIA SHOW CLOSES

LONDON, Nov. 25 - Special cablegram — When the fourth annual Olympia show shut its doors tonight it brought to a close an exhibition that produced more business for the motor car manufacturers than any other of the kind ever held in England. On all hands there were evidences of big business and hardly an exhibitor passed out the door for the last time without a bulky order book. Of course, it is impossible to estimate accurately the volume of trade done, but one authority, figuring on each of the 300 exhibitors having done at least $25,000 worth of business, declares the total orders will run up to $7,500,000, although a more conservative estimate places it at $5,000,000. S. F. Edge did particularly well, it being reported that he had received one order for sixty-six six-cylinder chassis, ranging in price from $5,000 to $7,500. He also landed another order for twelve chassis of the same type, this last being sent in by an Italian syndicate. It is also said the Rolls Royce people have sold practically their entire output through the show and that the liveliest interest was displayed in their new eight-cylinder car, although the latter is really not yet on the market. The Daimler company is especially proud of an order received from the prince of Wales for a car similar to the one owned by King Edward, while at least seventy other orders were booked, it is reported. Panhard & Levassor got their share of the plums, the gossips say, it being reported that something like forty cars of one type were disposed of during the show, while the others were in brisk demand.

London, Nov. 18.—The Britishers' big show at Olympia was apparently just a trifle too big for them to manage properly, as it was in a state of moderate dishabille when the public was admitted at noon yesterday. There was little excuse for this, as exhibitors had been in for over a fortnight. Only one stand, however, complied with the regulations on Friday morning. That was the Napier. The British ability to hustle was fairly clearly demonstrated, however, on Friday, by the afternoon of which most of the exhibits were fairly ship-shape.

There was no formal opening ceremony, but the usual luncheon, presided over by the chairman of the society, was held, at which the most interesting statement made was that the expected division of next year's show into two or three sections held on different dates will not take place. Sidney Straker definitely stated that next year's exhibition would be held in November on the same lines as the present one.

In dealing with the progress of the year, Arthur Stanley, M. P., chairman of the automobile club, estimated that the value of the cars running in the United Kingdom was not less than $75,000,000, and his estimate of the trade to be done during the next 12 months was as low as $10,000,000. Most of the speeches centered round the provisions of road facilities for motors, but throughout there was a strident note of suppressed triumph at the success scored in face of a very earnest if concealed attempt of the French motor trade to prevent the

GENERAL VIEW OF THE OLYMPIA AUTOMOBILE SHOW IN LONDON

Digitized by Google

ascendency of the British show by withholding their models.

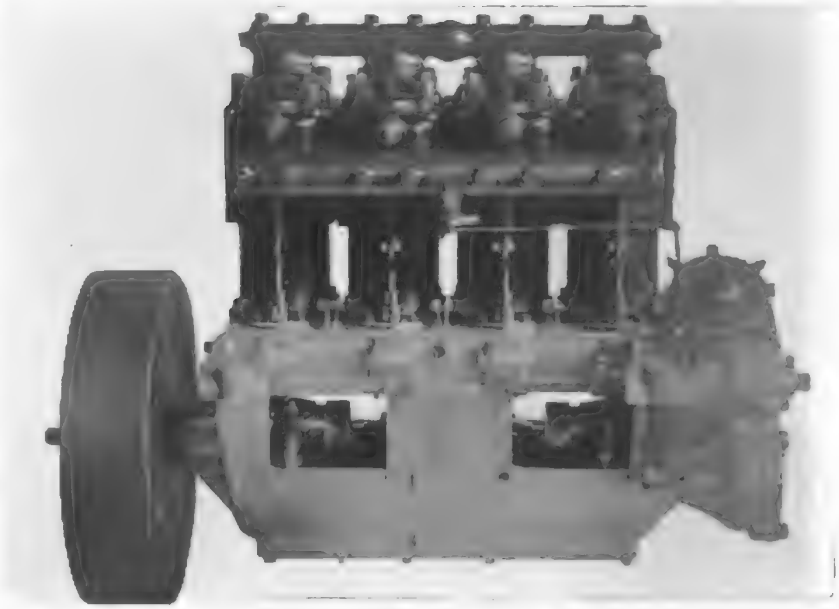
Every French model promised or applied for is on view, including some which have been sent across with a distinct stipulation that nothing would be published concerning them in the press until the Paris show.

An analysis of the prices show that the Mercedes, as usual, tops the list, the dearest car in the exhibition being a 70 horsepower chassis, which sells at $9,000. It is run close by the 60-horsepower six-cylinder Napier at $7,250. The cheapest six-cylinder car on view is the Standard, a Coventry built car, which is ticketed at $3,600. Of course, in four-cylinder cars the Mercedes holds the palm, while the cheapest is the Spiker, a Dutch importation, marked at $2,300. The very small class of three-cylinder cars is topped by the Bellsize selling at $2,750, the cheapest being $1,250. In two-cylinder cars the Maudslay heads the list with $3,000, and the Maxwell, which comes to us from your side, brings up the rear with $850. In single-cylinder cars the prices range from the 9-horsepower de Dion at $1,500 to the 6-horsepower Rover at $525. Thus the motor car manufacturer demonstrates that he provides for every pocket.

In mechanical details the clutch seems to be the principal point round which interest centers. The laminated disc has been adopted by the Gladiator, Standard, Argyll, Crayshaw-Williams, Fiat, Bellsize, Clement, James & Brown, Maudslay, Iris, Bianchi, Climax, Albion, Thornycroft and Martini. The single disk is adhered to by the de Dion, Iden and all the American exhibits, except the Winton, which, like the Napier, relies on a metal cone. Expanding clutches are only fitted by de Dietrich and Brouhot.

With regard to bearings, it is interesting to notice that the Mercedes, which fits ball bearings to every moving part, including the crank shaft, is followed by others, including the Enfield, the Spiker and Hurtu. Firms like the Napier give ball bearings to wheels, gear and live axle, but maintain plain bearings in the engine. This is the general practice in the better class, but there are some firms, such as Rolls-Royce, Bellsize and de Dion, Sims, Wellbeck and Thornycroft, which only use plain bearings throughout.

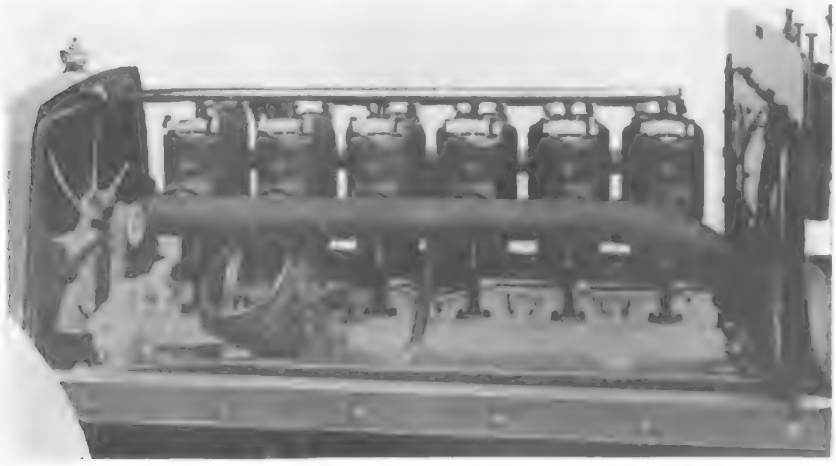
The great advance made by the Mercedes type of gear system has been already noted, and practically embraces every car that has been really redesigned for 1906, with the exception perhaps of the American exhibits, which, with the exception of the Winton, retain the epicylic type. Another feature of contrast between American methods and our own is the adoption of roller bearings on your side as against ball bearings on this. Every American exhibit has roller bearings to the live axle, and some have rollers also to the wheels. The only roller bearing firm on this side is the Argyll, which has introduced the system into its gear box, and claims high advantages for it. In all probability there will be a set towards roller bearings during the coming season.



THE COVENTRY HUMBER 12-14-HORSEPOWER MOTOR

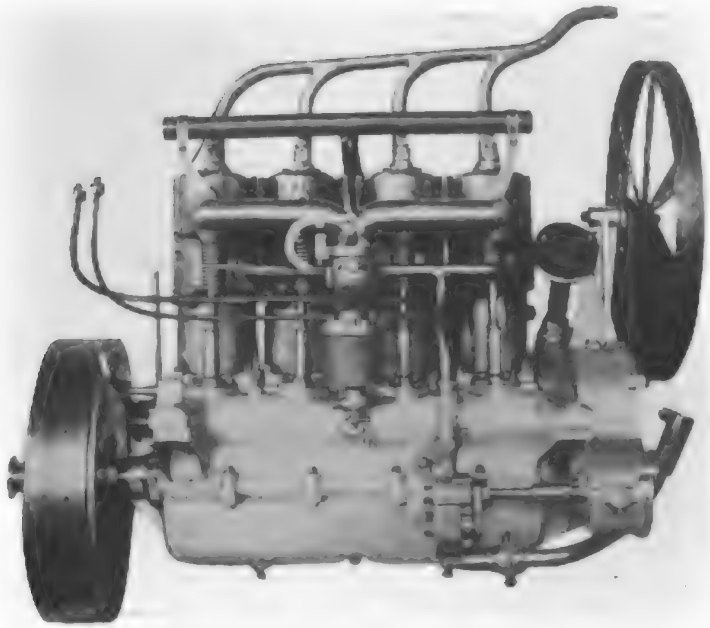
From a trading point of view the chief characteristic of the show is the prevalence of the landaulet type of car. This is principally intended for town use, but the increase in the number of covered cars of all types is very distinct. A few years ago the baldest form of canopy top without a glass screen in front was considered a luxury, then came the cape hood, but in the present shown the brougham and the landaulet are evidently the types of covered cars that will be sold during 1906. In almost every instance town types are of the four-cylinder design. The exceptions are the Panhard three-cylinder landaulet, the Napier six-cylinder, the Gladiator six-cylinder and the Rolls-Royce eight-cylinder. The reason for this multiplication of cylinders is variously given, but the plain fact of the matter probably is that town driving requires a large excess of power for the speed attainable. The absence of vibration is also a cardinal necessity, while freedom from noise and a capacity for traveling at low speeds without altering the gear, combined, of course, with the sound prices paid for these types of vehicle go to make the multiple-cylinder engine a universal type in this class of car. For touring vehicles, pure and simple, the side entrance of the body has entirely deposed the one-time tonneau. Last year there was a very obvious tendency to unduly lengthen the wheel base in order to provide sufficient room for this purpose. As, however, these cars, in actual use, were found to be unhandy in traffic, and for getting round corners or sharp turnings at speed, there has been a very general tendency toward reducing the actual wheel base while maintaining the length of body necessary to give the passenger room required. This has been done in almost every instance by providing extra long suspension springs to the rear axles, the extra length in the frame being supplied in an extended spring hanger. Some indeed decentralize the driving axle on these springs, but it is a practice which does not seem sound, and is not likely to obtain much vogue. In point of comfort and even luxury a very great amount of attention has evidently been devoted by makers of the high-priced cars, the Napier company, for instance, provides C springs on one of its landaulets, but for some reason have not staged the type, and several other makers have, it is said, adopted the same form of suspension.

Another characteristic of the show is the triumph of the pressed steel frame. When such devoted exponents of the tubu-



EXHAUST SIDE OF THE PANHARD & LEVASSOR SIX-CYLINDER MOTOR

Digitized by Google



THE REESTON HUMBER 16-HORSEPOWER MOTOR

lar frame as de Dion-Bouton and the Gladiator company abandon their favorite type, it is an eloquent testimony to the weight of motoring opinion. But the pressed frame has not only superseded the tubular; it has also beaten out the reinforced or flitch plate type, even on the smallest cars. From a constructional point of view the pressed steel frame is the last word and from a factory point of view it is probable that with the large increase in output the actual cost of producing the latest forms of pressed frames will compare very favorably with the armored type so general a few years ago.

The form of pressed frame in which the webbing of the section front of the dashboard was extended to form a sort of apron enclosing all gear but the engine crank case, does not find so much favor as last year. This was found to be all right in a big car in which plenty of room could be given, but in small cars it was something of a nuisance, and so it is being replaced by sliding panels of aluminum which fit in between the engine casing and the frame and can be withdrawn for cleaning or repair purposes. The full apron underneath the whole engine gear is not favored for the same reason—it interferes with accessibility. Accessibility indeed is quite a universal feature. Even a year ago it was evident that some of the leading cars were not the work of one designer, so much was one portion of the fitment allowed to interfere with proper access to some other. But that has been almost entirely swept away, and in the sweeping away some of what one may call the automaticity of the lubrication of many cars has been sacrificed to simplicity. The automatically-lubricated engine is all right so long as lubrication is automatic, but the accessibility to pipes of small diameter in order to properly convey the lubricant leads to clogging and dry bearings, while the multiplicity of lubrication pipes, high and low tension wire leads, water circulation and exhaust pipes, had so filled up the bonnet of an up-to-date motor car, that when any repair or adjustment was required, it was difficult at times to get properly at it without disconnecting these and so wasting time. Hand lubricators dealing positively with each bearing are now being reverted to, the argument being that any driver worth his salt will look after these things when he knows that they must be looked after; but when he has a perfect right to assume that these are being automatically attended to, failure on the part of the automatic device is certain to result in more or less serious damage. In this way the engines of 1906 have come to present a simplicity of outline, and the dashboards a comparative bareness that look strange beside the crowded and formidably furnished affairs of previous shows.

In radiators foreign firms seem to have found a means of rendering their cars distinctive in appearance, a sort of trade mark whereby each brand can be distinguished—not at all a bad idea commercially. And they have gone to the honeycomb radiator for this effect. Such firms as the Delaunay, Belleville, Germain, Gladiator, Spyker and Hotchkiss have adopted the honeycomb radiator with most artistic effect, viewed end on. British firms, however, have not sought for artistic effect—or have not secured it. They have to a great extent abandoned the honeycomb in favor of the vertical-tubed radiator, gilled, of course, and it must be admitted that this to a great extent lacks the appearance of the older type, although it is probably equally satisfactory in operation and certainly considerably cheaper to manufacture, besides being free from the tendency to leak under the effects of road vibration which is the fatal weakness of the honeycomb type. Necessity rather than choice has forced the British manufacturer into this, as so much of the water supply in this country is impregnated with calcareous and other deposits that the honeycomb type of cooler becomes rapidly furred up unless special means are taken to prevent it.

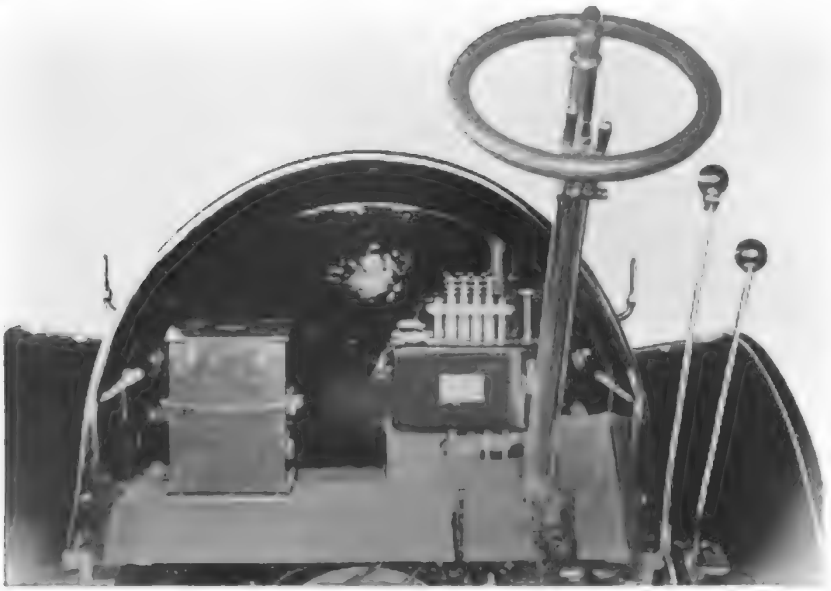
In bonnets the Mercedes and locomotive types in various modifications seem to be the leading lines. Some of the Mercedes types are quite squat, while some of the locomotive or barrel-shaped class are inordinately large for the amount of gear they cover or conceal. In splash guards a very much-needed measure of attention is noticeable. Some cars are to be seen in which the wheels are screened off from the frame and body. Splash guards follow the wheel contour more than formerly, and are carried nearer to the ground. Chain-cases to driving wheels are evidently going to be the thing on high-grade cars where chain transmission is retained, and nobody will quarrel with what is once more a sensible tip adopted from the cycle engineer.

The dashboard with curved over top and sides, first seen on the Daimler cars, has found a considerable number of imitators among British exhibitors, and is undoubtedly one advance on the bare and somewhat low dashboard, which continental designers have always favored. The curved dash permits the designer to dispose his coil, lubricators, manometer, speedometer and other warning paraphernalia under cover to some extent and move out of the way of harm while the appearance is not at all displeasing to the eye.

Another marked feature is the greatly

THE MUCH-DISCUSSED SIX-CYLINDER NAPIER MOTOR

Digitized by Google



ROUNDED METAL DASH OF THE 16-HORSEPOWER BEESTON HUMBER CAR

extended adoption of ball-bearings for every part except the crankshaft. It is proposed to fit them here also, but up to the present nobody has actually done so. When one remembers the scorn with which earlier motor designers flouted everything that savored of cycle practice, this adoption of the cycle manufacturers' pet form of bearing is instructive. Ball-bearing thrust blocks were the first step, and Mercedes designers set the fashion by fitting them to wheel hubs and gear shafts. Now they are finding their way into the steering pivots, magneto, countershaft chain wheel bearings, and, of course, live axle bearings. The danger to be apprehended from fractured balls or powdered bearings was found to be so largely the result of light or flimsy construction necessary to secure adjustability, that, once the latter doubtful advantage was dropped, and bearings made of size and material commensurate to their work, the indispensability of the ball-bearing for motor car construction became evident. At the moment the D. W. M. bearings are almost entirely relied upon and although "made in Germany" they are so satisfactory that their rivals are not having a very gay time.

It may be plainly said that although there are about half a dozen types of disk, or laminated, clutch on the market, there is little difference between them. But that difference is somewhat intricate as disk clutches require careful assembling and accurate designing and forming. They are consequently considerably more costly to make than the other types and the general desire to cheapen them is balked by the necessity to provide something that will cause the disks or plates to automatically free themselves when the clutch pedal is depressed and the clutch spring withdrawn. In the Hele-Shaw type, flat springs are imposed between the plates of each set—drivers and driven—so that, while the clutch spring pulls all the plates together to take frictional contract, the super-imposed springs in the laminations tend to separate the disks as soon as the pressure of the clutch spring is withdrawn. In the Bradley, which in various modification is seen for the first time on cars at a show, this separating function is performed by a series of studs, which are so arranged, and are of such length, that every plate or disk has three equidistant studs that do not find a passage through it. That is to say, if there are ten plates there are thirty freeing studs of which only twenty-seven pass through plate No. 9, twenty-four through plate No. 8, twenty-one through plate No. 7, eighteen through plate No. 6 and so on. The studs are of just sufficient length to exercise a pressure against the particular plate acted upon, in opposition to the superior power of the clutch spring. In this clutch a scissors action is introduced by the clutch spring which, situated between the actuating members of the drivers and driven disks, pulls the latter into frictional contact by forcing the actuating members asunder. As soon as the clutch spring is compressed the operating members, each carrying its circle of freeing studs, immediately commence releasing the disks—each being practically released in succession, and so on throughout the whole series. The Gladiator people, for instance, make their disks from mild steel case-hardened, and curves the edge of the disks so that main in frictional contact with each other, or with the opposing set, against the pressure of this curved edge or rim once the clutch spring pressure is withdrawn. In a sense, the Hele-Shaw design is improved upon by making the case-hardened rim of each disk take up the function of the flat spring adopted in the Hele-Shaw. It would be idle to deny that disk clutches have given bother, but they have only done so when badly constructed or neglected. The question of suitable lubricant in suitable quantity, suitable steel suitably treated, and correctly designed bearing surfaces, have been solved satisfactorily, and the disk clutch at the moment appears destined to outlast all others where the matter of cost is not a bar. The expanding metal-to-metal clutch is practically the only alternative for high-powered cars and the weight and massiveness of this is certain to cause its rejection in time, even granting that it is a very satisfactory device.

The usual form of expanding clutch is one arranged inside the fly wheel with cast iron shoes engaging with the internal circumference of the fly wheel. It is partly enclosed to retain a certain amount of oil and to exclude dirt and dust. It is normally held in engagement by an adjustable spring and provision is made to take up wear in the clutch shoes. A ball-bearing thrust is fitted which comes into operation when the clutch is being disengaged, but is really a superfluity, as there is very little end thrust. The clutch shoes are withdrawn by a wedge action operated by the sliding fork of the clutch, the wedge neutralizing the action of the spring and drawing together the clutch shoes.

In engine construction little that is really novel is to be noted outside the mere matter of cylinder duplication referred to above. At one time it appeared as though the three-cylinder type was to have a place, but this does not now appear probable. Firms making three-cylinder engines in this country have not had a too happy time. So far the only commercial success attained in three-cylinder design has been the Panhard, and even concerning this rumor has been tolerably busy. It is said that probably but for its undoubted adaptability for landaulet design this might have been dropped by the big French firm. As it is, it still remains a standard in the United Kingdom, although it is significant that it is not a standard in France. There has been to some extent a reversion to the practice of casting cylinders in pairs and in minor ways considerable diversity of treatment is observable, some placing the valve pockets on opposing sides of the cylinder, others on the same side, but less gear is shown exposed. A general tendency is to enable the half-time cam gear to be withdrawn bodily if required, and in other ways this question of accessibility has been carefully treated not only in the engine but in every portion of the car design. The tendency toward fast-running engines is more pronounced, nearly every fresh aspirant and a considerable number of the standard firms now fix 1,000 revolutions as their basis for calculating power, even on the largest cars. This, of course, indicates the lightening in construction which brings other benefits in its train. Firms, however, like the Daimler, Panhard, Mercedes, Wolseley, and others have made little alteration and still run their engines at speeds of from 750 to 900 revolutions.

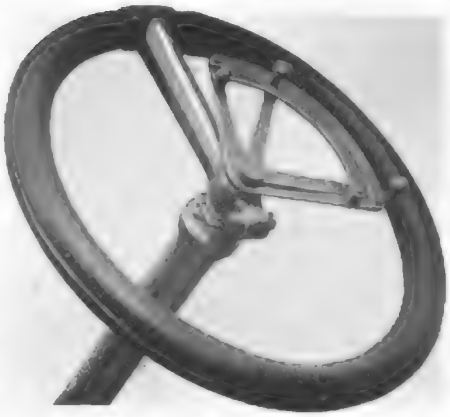
As was generally expected, the Wolseley company has now definitely commenced the abandonment of the horizontal engine, which is only found in the two smallest types manufactured; and it is also significant that despite their phenomenal victory in the Tourist trophy race, the Arrol-Johnston people in introducing a four-cylinder type, have adopted the vertical engine. James & Brown, the Singer company and some from your side such as the small Oldsmobile, the Adams-Hewitt and Cadillac retain the horizontal type, but broadly speaking, in this country at least, it has

Digitized by Google

become obsolete, not through any inherent defects of design, but simply because public demand is evidently in favor of the vertical type. In gears there is little to arouse comment beyond the increased adoption of the Mercedes type of split gear sleeve operated by the gate type of movement. This is more particularly noticeable on cars of 12 to 14 horsepower and upward, as the single long gear shaft of the Panhard type was found to spring under heavy driving pressures when gears began to wear a bit. By splitting the gear sleeve in two, the shafts, of course, can be maintained at much greater strength for the same weight. This and the adoption of ball-bearings to the gear shafts sum up the principal change in design. In the large power cars four speeds are invariably given, with direct drive on the fourth; in the small cars and the cheaper types three only are given in each case, the top speed being a direct drive.

In carbureters the influence of the Tourist trophy race is plainly visible. Automatic carburation is universally claimed, some insisting on greater success than their fellows by devices more or less founded on the Mercedes design, in which separate spray chambers are provided, which come into operation in sequence, according to the demand of the engine. Thus, if the car is running light, one spray chamber is sufficient to provide the necessary fuel, but the driver can, at will, bring all or any of these spray chambers into operation, and automatic arrangements are also provided by which the engine itself has a selective power in the same direction.

Not a little attention has been paid to convertible bodies, for your Englishman is just getting wise to the fact that it is economy to have two or possibly three bodies, particularly if he is at all luxurious and has a pocketbook long enough to stand the strain. The ability to make a quick shift from a touring car to a runabout or to a limousine is one that appeals strongly to the well-to-do classes. A touring car is not always a desirable machine to travel in going to the opera, so if it is possible to change bodies without great loss of time one really has two cars at his disposal. Or if the man of the house desires to knock around town in a runabout he finds the convertible



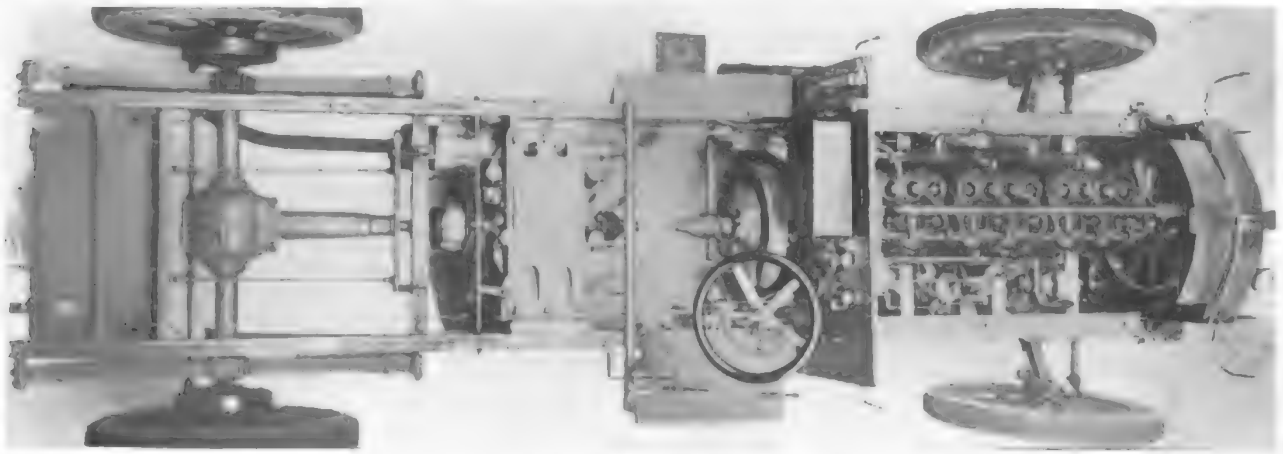
Humber One-Arm Steering Wheel

body to be just what he wants. It really is a three in one combination. One of the quick-change bodies greatly admired comes from the shop of W. and F. Thorn & Co., and can be turned into an open car, a landaulet or a victoria. For example, the landaulet is secured by slipping the front pillars on to the back of the front seat, which carries the front glass when it is raised from behind the seat. Two men can put the rear portion of the landaulet into position, which is firmly held by metal dowels which slip into slots prepared for them. The victoria hood goes on even easier when substituted for the landaulet top. This gives a car which affords sufficient protection in inclement weather. An ingenious spring fitting and stay striking device allows the landaulet head or victoria hood to be swung into position.

Lieutenant Windham has brought out a system for building the car body so that the back part can be almost instantly removed, and a runabout can be had. This is accomplished by means of a small, light steel flitch fastened to the sides of the frame of the chassis. In position this forms an L-shaped guide, the vertical and horizontal surfaces of which measure only about an inch. The lower edges of the sides of the body are made of corresponding shape, so that the latter may slide into position from the rear. The extreme forward portion of the bottom part of the body is cut aslant and abuts closely to the rear ends of the woodwork of the front seats. An automatic lock fastens the body, but to make it certain and insure greater rigidity there are two or three steel pins fastened into corresponding holes in the transverse members of the frame. No lifting tackle is required, wooden legs with rubber-tired castor wheels enabling one man to run the body on to the chassis. When it is being removed, the front legs can be dropped before the body is clear of the chassis. When once off it can be wheeled away. With this device the machinery is easily gotten at. And, too, one chassis affords a side-entrance tonneau, a brougham or a shooting brake body converted in a minute. Or a runabout can be had just as easily.

In tires it was noticed that the Dunlop people have a novelty in the way of a new security bolt, designed to obviate the liability of the old bolts to fold over and crinkle, which has often resulted in a burst tire. The new bolt is made with a comparatively stiff base of india rubber over the steel bolt-head. The rubber is clothed in canvas, which is believed to make it impossible to get out of shape.

While the Olympia shows of course attracted the most attention with its magnificent display of automobiles and parts, the Stanley affair at Agricultural hall is not overlooked by any means. That old standby, started away back in the cycling days, is doing business at the old stand, not in the least daunted by the splendor of the Kensington affair. All the motor car makers are not at Islington by any means, there being several instances of makers taking part in the Stanley and cutting out Olympia, although probably in most cases this is because they could not get satisfactory space allowances at the big hall. In addition there are motor cycles, tri-cars and pedal bicycles, while is anything, the exhibition of motor parts and sundries is far more complete than the rival affair can show. This is particularly true of the smaller articles. The Stanley is, in a smaller way, almost as handsomely decked out as the other one, while the attendance is keeping up in a way that shows the interest taken in shows by the British Public. The best part of it all is that people seem to go to the show to buy,



Plan View of the Six Cylinder Napier Car

Digitized by Google

MOTOR AGE
New York Office
29 West 42d Street
London Office—
American Publication
Bureau 55 Manor
Park Road, Harlesden,
N.W.
309 Michigan Avenue
CHICAGO
Published every Thursday by the
Trade Press Co. N. H. Van Sicklen
Manager—Telephone Harrison 4410
Member National Association of Automobile Manufacturers, Chicago Trade Press Association and Official Organ of the American Motor League
Subscription two dollars per year—Foreign subscription four dollars
The Western News Co. of Chicago and its branches
supply newsdealers—Entered at the
Chicago postoffice as second class matter

THE SELFISH INDIVIDUAL MOTORIST

IT HAS about become a settled fact that motoring organizations cannot depend upon the average motorist to be of any help in the matter of securing for the automobile community those things which have been earnestly sought since the automobile became at all popular.

The average automobolist—and more particularly the one who abides within the gates of most of the American cities—seeks his own pleasure and thinks little of his neighbor.

He might be of some service to the community if he were so disposed and if he only realized what organization and work mean. But he will not leave his own pleasure getting long enough to even sit down and do that little bit of thinking.

A few enthusiastic motorists in the country are hammering away with but scant support from the motorists at large and none too much from those who seemingly ought to have a vital interest in all that might be of benefit to the motoring community. It is not to be wondered that it is discouraging to the leaders of the automobile organizations—the national bodies and the clubs.

The fact that a club, for instance, is enabled to boast the enrollment of 500 or 1,000 names of prominent motorists as members is of little value when it comes to securing that to which motorists are entitled, to say nothing of what they think they should have, and, considering all that other users of the highways secure, what they really ought to have.

Names will not work and names do not nowadays carry any considerable amount of influence with them. It it the work that one does that makes him a valuable member of a club and not his name.

The clubs and other organizations which are in existence in most of the large cities of the United States are woefully lacking in earnest and hard working members. The average man is content to sit around and permit his brother member do his share of the work. He feels sufficiently puffed up to regard the use of his name on the membership roll as sufficient on his part.

He is missing a whole lot he might have in motoring freedom if he were to realize what it means to put his shoulder to the wheel and help out the men who are burdened with all that club life brings.

The lack of unity on the part of members, too, has had an ill effect. The public and the authorities know too well that there is little actual interest taken by club members, and so the club's influence is far from being what it might be.

Too frequently automobile organizations, particularly clubs, have been taken to task for not being of a more representative character and for not accomplishing more for the benefit of automobiling than has appeared in the surface.

Sifting the matter down possibly the managements of the clubs are justified in doing nothing more than furnishing entertainment for those members who take sufficient interest in the organization to attend these entertainments.

The individual motorist, whether a member of a club or not, who makes no effort to promote the good of automobiling in the matter of just legislation and good roads, should make no complaint whatever and his voice should never be heard. The citizen who has a vote and does not exercise the right of franchise is not in a position to criticize the results of elections and the acts of public officials. The motorist who does nothing and who says nothing is in exactly the same light.

The club member who does nothing and says nothing is in every manner a detriment to the organization; his membership should not be sought.

It always has been and it probably always will be that the organizations of the character of automobile clubs are dominated by a few public spirited and enthusiastic individuals who for their work and their time receive nothing more than criticism and abuse but who are usually charged with grafting.

There are officials whose names in the public press occasionally and on nice stationery always appeal to their owners; they are of no benefit to the organizations. These officials, put there by the membership at large for their apparent influence, can be of little benefit to any organization as long as they do nothing but permit their names to be used.

Man should be known for his deeds and not for his words. The number of men interested in the welfare of automobiling today could be placed under the fifty mark, and these fifty men are endeavoring in all decent forms to benefit the automobiling hosts. On the other hand, the automobiling hosts sit idly by and permit a few to do the work that should be divided among the thousands.

The difference between the cyclist of a decade ago and the motorist of today is that where the cyclist was compelled to fight for his right—because he was not burdened with money—the average motorist of today can afford and prefers to pay a fine, for instance, rather than be bothered fighting what might be a case of injustice.

The motorist who has permitted such a case to go by the boards deserves not only to be mulcted out of the money he paid as a fine, but the condemnation of all motorists, for by such action he has been guilty of encouraging graft, and the more encouragement the grafter receives the harder will be the burden of the automobilist.

It should be the endeavor of the clubs to punch up the individual motorist to the point of enthusiasm that will turn him from a drone to a worker. In no other manner can automobiling receive that to which it is justly entitled and have a standing in the country which will force recognition.

SETTING A VERY DANGEROUS EXAMPLE

WITH motorists clamoring for more liberality in the matter of speed laws, claiming few infractions thereof, it seems a little inconsistent for dealers and makers to flaunt a red flag in the face of the bull by attempting to break road records and to announce wonderful speed qualities of their cars on the highways.

The past few weeks have seen reports of a number of cases wherein those who should have been most careful were guilty of infractions of the laws governing speed of automobiles on the road. It requires only a few such cases to undo the work of many, work that has been accomplished by extraordinary effort for a good many years.

The motoring organizations that have persistently fought for liberality on the part of the authorities are receiving scant aid from the manufacturer, or the agent, or the individual motorist who tears through the country at such speed as will give him the credit of having gone from one to another place in a shorter space of time than did anybody else. If there is one who should be the observer of the law relating to speed, it is the man who is earning his living by the sale of cars, for the responsibility of the acts of the scholar are upon the head of the teacher.

The authorities and the rural residents are at present in no mood to be trifled with; they have some cause for drastic actions, and to fan the smouldering coals can in no manner do the least particle of good. It is commendable on the part of some that they do their stunts on tracks, where no harm to and no criticism from the public can be forthcoming.

Motor Age believes few of the present day speed laws are as liberal as they might be, but as long as these laws exist they should be respected. If they are not what they should be motorists ought to work to have them made satisfactory. To go out and break speed regulations will by no means tend to have speed limits raised; rather, it will tend to have more drastic regulations take their places.

Digitized by Google

Turning the Week

Selden Patent Suit

Did it ever strike you that motorphobia might be another name for the green-eyed monster?

Maybe the Glencoe trustees believed, when they put up their warning sign to scorchers, that "a soft answer turneth away wrath."

The scorcher caught red handed can settle back and think with pleasure how many Thanksgiving day dinners he is paying for today.

A proposed commercial line in Texas will, it is announced, run from "some point on Tremont street to Mike's place." There's nothing like having a good terminal.

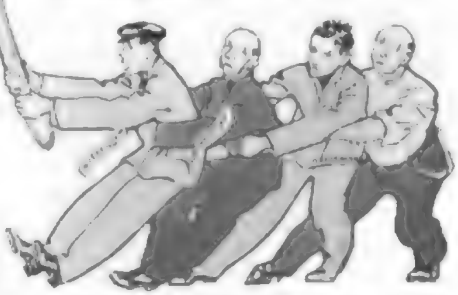
Many a motorist is today taking a tour through Turkey in his own dining room.

That the Thanksgiving day turkey will not be caught scorching is the hope of the motorist.

Maybe the Gliddenites are going through Canada next year to avoid Constable Quinn.

Cruel law-makers want Detroit automobiles to wear aprons. Next thing they will want them to go into the kitchen.

The Coliseum may be likened to a commercial wagon in that it has the First Regiment armory for a trailer for the approaching Chicago show.



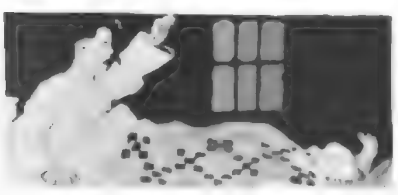
The Week

It's going to be a hard winter for the constables who were not far-sighted enough to make hay while the sun shone. The spendthrift will have to take to the snowball diet.

To hear all this racing talk one would imagine winter is just outside the door, only waiting until the Thanksgiving turkey is well digested before making anti-freezing compound almost as necessary as gasoline.

Those French makers who would only show at Olympia upon condition that the press would not give away the details of construction of their 1906 models resemble the ostrich who stuck his head in the sand and imagined he was well hidden. Over here such secrecy would only stir the press to redoubled efforts.

Bing-bang went the broadside of allotments from the Coliseum and New York armory last week. Boom-boom reverberates from the Madison Square garden this week. The attack from Olympia has been answered and it only remains for Paris to complete the war concert in the automobile world.



Michigan towns and villagers infected with good roads enthusiasm, many of them hastening to take advantage of state aid law with idea of securing best highways in country.

Announcement of list of spaces taken for Madison Square garden show is made: provision made for 220 exhibitors; twenty-one on waiting list; maps not ready.

Glidden tour committee decides to start next year's run from Buffalo, route going through Canada and White mountains and ending in New York city.

National Grange of Patrons of Husbandry recognizes motor car as "an innovation in modes of travel which must be accepted."

Olympia show closes in London after successful run, one authority claiming $7,500,000 worth of business was done.

Automobile Club of Philadelphia secures concession which will save members journeying to Harrisburg for licenses.

Conditions governing France's big tire race in 1906 given out: no one manufacturer can start more than four cars.

American Motor Car Manufacturers' Association meets in New York, admits new members and talks show.

R. L. Jefferson reaches Turkey, being first motorist to make trip, going 2,509 miles in 31 driving days.

Rumor has William K. Vanderbilt, Jr., in Florida trying out Hemery Darracq for January meet.

C. S. Rolls lectures before Ladies' Automobile Club of England on his motoring experiences.

Changes are made in Cuban program, sprint races being billed for Monday, February 12.

Percy Megargel, passing through California, greatly impressed with oil roads of state.

Joe Tracy sails for Europe to buy fastest racer obtainable for unknown customer.

Frederick Dufaux breaks French kilometer record, doing 23 seconds flat.

Show for automobile parts people talked of for Chicago next fall.

At Marshall field, Chicago, at the Michigan-Chicago gridiron battle today, it was hard to tell whether the affair was an automobile parade or a football game.

They say too many cooks spoil the broth, but it's a safe bet that when all the exhibitors get into the garden the only spoil connected with the affair will be the result of a well-conducted exhibition.

R. L. Jefferson—England's Percy Megargel—writes F. R. G. S. after his name. What's that mean? Probably Free Ride Going South, as indicated by his recent trip from England to Turkey.

Pittsburg is certainly up to date with its automobile ghost. The American people who work are familiar with the ghost that walks once a week, but they have yet to strike an aristocratic one that rides.

Just think what an ideal automobile ordinance Chicago will have when the city fathers are each provided with an automobile as per the plot that is hatching. Even liberal France will have to go to the Windy city for a model.

Digitized by Google

OIL ROADS THE THING

Percy Megargel Has Nothing But Praise for California Highways —Conditions on Coast

Palo, Alto, Cal., Nov. 21—Somewhere between here and San Francisco my suit case tumbled out of the tonneau of the Reo Mountaineer and now I am obliged to wear stage clothes, on and off the car. My leather and courduroy combination, while quite in place at the hunting camps in the Cascade and Rocky mountains, looks rather the worse for wear and considerably the worse for grease in the dining rooms at the semi-tropical hotels along the California coast. The lost case contained all my personal possessions carried on the trip, but I suppose this is one of the fortunes of war, or rather of touring.

The much-talked-of, much-written-of oil roads of California were no disappointment. The half has not been told, for never have I enjoyed an automobile trip more than the run from San Francisco to Palo Alto and they say that this is the worst stretch between San Francisco and Los Angeles, 500 miles further south. If such is the case it is no wonder the automobile and the motor cycle are so much in favor in California. Never once did I have to resort to low speed on the run from the city, while the oiled surface of the road did away with the obnoxious dust so frequently encountered in the east.

Few eastern automobilists have any idea what winter motoring in California is, or they would ship their machines to the Pacific coast at the first sign of frost and stay here until the winter months have passed. Imagine, if you can, a broad, oiled highway, wide enough for many automobiles or vehicles to pass at full speed, lined on either side by high shade trees and palms. In the east I have occasionaly run through such an avenue for ½ mile or so, but here it is the same for mile after mile. All cross roads seem to be built in the same manner. Every few miles we come to some small town, whose houses are all of the picturesque kind that I thought only existed in the guide books issued by the travel-seeking railroads.

Palo Alto, famed the world over for the wonders of the Leland Stanford University, is a typical college town and an up-to-date one, too. The 2,000 odd students—and many of them are odd—that comprise the university forces, distinguished according to class by the fantastic headgear worn—red hats, painted plugs and wide brimmed cowboy styles designating members of the three upper classes, while no hats at all or battered relics of what once might have been proper head coverings, show only too plainly the trials and tribulations of the freshmen at the big school.

At the big football game between Stanford University and the University of California, 230 automobiles were parked on the college campus. This will give a person some idea of the general use of the automobile in California.

Not only do automobiles sell out here, but the bicycle business is on the increase yearly, while motor bicycles cannot be shipped into California fast enough to supply the demand. Four hundred bicycles was the week's business done by one San Francisco jobber last week, they tell me. To anyone in the east who thinks the bicycle is a thing of the past, a trip to California would convince him otherwise.

The express on automobiles to California is something enormous and freight is almost as high. Machines that sell in the east for $1,250, bring $1,400 here and larger machines a correspondingly higher price. The Sunset Automobile Co., of San Francisco is manufacturing a two-cycle, two-cylinder runabout, but all other machines are of eastern make. While the larger machines find many purchasers, the demand seems to be for a popular price, popular weight tonneau car, the tonneau of which can be detached when a runabout is desired. Cars to meet San Francisco requirements should possess at least 12 horsepower, while 16 is preferable.

Luckily for us, the Reo Mountaineer is well equipped with powerful brakes, for the hills one encounters in the city of San Francisco are far steeper than anything I have encountered in either the Rocky or Cascade mountains. Of course, they are paved and much smoother, making it easier to climb them, but with their smooth surface it is an easy matter for a car not provided with ample brakes of a powerful nature, to get beyond the control of the operator and do untold damage. The street cars used on these hills are all cable cars, no electric being powerful enough to be kept in control during the descent. From Palo Alto we run to Los Angeles and then across Arizona and New Mexico to Kansas.—PERCY F. MEGARGEL.

BUCKEYES NOT AFRAID

Cleveland, O., Nov. 26—W. L. Colt, chairman of the Cleveland Automobile Dealers' Association show committee, says the club has no fear that the project will be interfered with by T. C. Whitcomb or any one else. As intimated last week, Whitcomb claims to have an option on Central armory for the show week. The dealers' organization claims it has a signed and sealed contract giving it the use of the armory for that week and an option can make no difference. George Collister, who will manage the show, is getting out plans of spaces and entry blanks and these will be sent out this week. Central armory is much larger than Gray's armory, where the show has been held heretofore, and the only reason it was not used before was the fact that there were no provisions for heating the building. It is believed the association can accommodate 50 per cent more people than ever before.

HAS NEW AIRSHIP

Toledo, O., Nov. 27—Roy Knabenshue, the aeronaut, is building a new airship at his home city, for his use. The new craft will be much improved, with a more powerful engine, while other defects in the original air vessel will be corrected. The greatest difficulty the aeronaut had at first was with the carbureter, which produced an uneven flow of gasoline, causing the engine to stop, and the ship to come to earth. Knabenshue is now using the invention of Charles W. Parsons, of Toledo, an inventor of a vacuum carbureter which has solved this problem.

FIX UP GLIDDEN TOUR

Next Year's Run Will Start at Buffalo and Run Through Canada to New York

New York, Nov. 25—The A. A. A. Glidden tour committee, in announcing the route and starting point of next year's run, has given marked consideration to westerners, who in the last tour were asked to come to New York for their start. Next year the run will be for the greater part of the way through Canada. The start will be made from Buffalo on July 23 and the jaunt last for 2 weeks. The start will be made from Buffalo at the special invitation of the Buffalo Automobile Club, one of whose members, Percy Pierce, is the present holder of the cup. The Canadian motorists, and particularly the Toronto Automobile Club, which extended a special invitation, have been urgent for the past year that the tour should be in part in their territory. They had magnificent roads and unsurpassed scenery to offer and the committee did not resist the temptation to select a new path and new surroundings in a run through Canada.

Beginning at Buffalo, the tourists will visit Niagara Falls, crossing into Canada, visiting Hamilton, Toronto, Kingston, the Thousand Islands, Ottawa, Montreal and Quebec, thence heading south to Poland Springs, Me., next crossing the White Mountains country, traversing Vermont to Lake Champlain, thence to Saratoga, to Albany, and following the Hudson river to New York City.

The route will be a circuitous one, taking in the best roads in Canada and the most picturesque sections of the New England states. The distance to be traveled will be nearly 1,500 miles. The test will be a particularly severe one, owing to the mountainous and unimproved condition of many of the roads to be traversed. Niagara Falls will be visited en route to the Canadian border. Special arrangements are pending with the Canadian customs authorities so that no trouble may be experienced from that source. From Niagara Falls the route will be over a fine old gravel road through St. Catharines, Grimsby and Hamilton, to Toronto, where the first night's stop will be. The tourists will be entertained by the Toronto Automobile Club.

The second day's run will be over the famous Kingston road, the best macadamized highway in Canada, passing through Whitby, Oshawa, Bowmanville, Port Hope, Coburg, Belleville and other old Canadian towns to Kingston. As this point is the military headquarters for Ontario and at the beginning of the St. Lawrence river and the Thousand Islands, it is possible that a day may be spent in the neighborhood by the tourists.

Dirt roads of inferior quality will be ridden over on the third day via Brockville and Prescott and thence north to Ottawa, the Canadian capital. Here will be a night stop before beginning the short but tedious journey over dirt and rock roads to Montreal, the largest city in the Dominion. Better roads and a more interesting run will be had on the fifth day

Digitized by Google

along the south shore of the St. Lawrence to Quebec, one of the oldest and most picturesque cities on this continent.

From this point the itinerary is not so well fixed in mind, but will include a run south over the uncertain Maine roads to Poland Springs, thence west through New Hampshire and the White Mountains to Bretton Woods for a day's rest, then traversing Vermont to Lake Champlain; thence to Saratoga and Albany and along the Hudson river to New York.

Though the route chosen will be interesting from a scenic standpoint, it will be so severe a test for so short a time to be occupied that those who know something of the roads to be traversed believe that the itinerary will need to be considerably curtailed. These point out that the worst roads of the Canadian loop could be obviated by making the run from Kingston direct to Montreal instead of turning north at Prescott. It is believed also that an improvement will be made by taking a more direct route from the White Mountains to New York via Massachusetts.

TIRE RACE CONDITIONS

Paris, Nov. 18—Conditions which will govern France's tire race, styled the coup de bandage, have been made up. Not more than four cars can be entered by one manufacturer. The entrance fee of $600 is fixed for each car up to February 15, but after that date the fee will be doubled, the entries being closed on May 15. The distance to be covered will be from 620 to 930 miles, and the race may be cut into two stages if necessary. The weight of the chassis is not to exceed 2,650 pounds, including two seats. Each vehicle must carry a box behind the seats capable of containing 880 pounds of dead weight in the shape of sand, this load being so arranged that it is carried directly over the rear axle. The cars must have the same type of tires on all four wheels. These tires will be divided into two classes, one consisting of ordinary pneumatic tires and the other solid tires of all kinds and springs, etc., or a combination of solid tires and springs. Elastic wheels cannot be used with pneumatic tires. The covers and non-skids, if used, will have to be marked, and must not be changed during the race, but four spare air tubes may be carried with each car, and marked in the same way. Repairs can only be carried out by the driver and his mechanic with the aid of tools on board. The solid tires will also be marked, and no part can be replaced during the race. Nevertheless, the maker of a solid tire may apply for permission to carry spare parts, and the sporting commission will decide whether this application can be granted. In sending in an entry, the maker must submit a drawing of his tire, a complete tire, the pieces that he would like to have the option of changing during the race, and a full account of the operation of replacing.

AUSTRALIAN WIN

New York, Nov. 24—Cable advices received by the Continental Caoutchouc Co. from the factory at Hanover, Germany, that the reliability race between Melbourn and Sydney, Australia, was won on a Mercedes car fitted with Continental tires.

SMOKY CITY IS ON MAP

Importance of Pittsburg in Motoring World Now Recognized by Makers—Plans for 1906

Pittsburg, Pa., Nov. 27—At last Pittsburg is on the map. Every railroad that has a town along its line that manufactures automobiles is doing a good passenger business carrying the representatives of those factories to the Smoky City. Five years ago such an outlay for car fare would have been thought financial imbecility. Now there is not a motor car manufacturer however thick he may have been who has not been pricked hard and deep the last 2 years by the thought that his firm was not getting any or at least not enough of the hundreds of thousands of dollars' worth of business that was going out of the busiest town in the world. He is wide awake this fall. Not a stone will be left unturned to get next to the Pittsburg dealers, old and new, and carry off their cash.

Such a scrambling for agencies and for agents has never been seen in Pennsylvania before. If the man of means or credit that calls Greater Pittsburg his home cannot find an automobile in 1906 to suit his tastes and right at home, too, he must be a veritable petticoat enthusiast of the fifteent variety. Over sixty models will be ready for his inspection by the first of the year. They will range in cost all the way from $500 to $5,000. Their respective claims for being able to stand the Pittsburg hills and so-called pavements will be marvelously strong, for manufacturers have learned a thing or two in the last 2 years and are taking note of these little bits of wisdom in planning their new machines.

From the early days of automobiling, when the Autocar and the Peerless were among the pioneers on Pittsburg streets, the industry has grown to such proportions that nearly a dozen new agencies have been added to the list for 1906. Several old firms have taken on one or more new agencies. The new firms naturally are getting the new agencies and there is going to be the fiercest kind of rivalry this year between the opposing forces.

To begin with the older agencies. The Banker Brothers Co. will handle in 1906 the Pierce, Stevens-Duryea, Cadillac and Studebaker in all their models. The Stevens-Duryea was handled last year by the Keystone Automobile Co. Banker Brothers last year had the Buick and the Northern.

The Standard Automobile Co. will handle the Pope-Toledo, Franklin, Winton, Packard, Royal Tourist and the Oldsmobile. The Standard has given up the electric business and the Pope-Waverley will be taken over by B. L. Brown, its electric manager, who will establish a new place in the garage now occupied by the Hiland Automobile Co. as soon as the latter's new building is completed. The Royal Tourist is a new agency for the Standard and is the first time it has come into any extensive prominent here.

The Keystone Automobile Co. under its new manager, G. P. Moore, formerly of Chicago, will stick to the White steamer and the Ford. These cars have proven great favorites in Pittsburg. The company has given up the agency for the Stevens-Duryea and the Columbia. The Keystone has the exclusive Pittsburg agency for the Exide battery of the Electric Storage & Battery Co., of Philadelphia and this department of its business was very profitable last year.

One year old, the Hiland Automobile Co. will sell the Autocar, Peerless, Thomas and the Buick. The Autocar has been hitherto the only agency of the Hiland people. The Liberty Automobile Co., also organized 1 year ago, will stick to the National, which it handled with good success last year. It has given up the Ford and Acme agencies. The Central Automobile Co., recently organized, will start business with the Reo and the Stoddard-Dayton. The Reo was sold last season by King & Larimer and the Stoddard-Dayton is a new agency in Pittsburg. The Central will be ready for business in its new garage about December 15.

L. G. Martin, the Oakland automobile dealer whose garage is close to the main entrance of Schenley park, will pin his faith to the Rambler. Last season he handled the Thomas. The East Liberty Automobile Co., which has just been announced, has taken on the agency of the Jackson. This is a brand new agency in Pittsburg. The Atlas Automobile Co., which has dealt hitherto exclusively in second-hand cars, will shortly take on a new agency as it is now negotiating for three well known cars. The American Motor Co., which expects to locate downtown, has not announced its agencies nor have King & Larimer, of the east end.

Most suggestive about this agency business now is that the agencies are being signed up fully a month earlier than last year. Since October 1 manufacturers have been sending their representatives to this city to look over the field and make a choice of firms to handle their respective cars. The fact that many local wealthy automobile buyers visited the factories themselves early in the fall to get an idea of the 1906 models was enough to make the local dealers hurry up in closing their contracts and the automobile business will be in much the best shape by January 1 that it has ever been as a result.

NEW INDEPENDENTS

New York, Nov. 25—The American Motor Car Manufacturers' Association's executive committee completed a 2 days' session today. Those present were: J. C. Couzens, Ford Motor Co.; William M. Lewis, Mitchell Motor Car Co.; A. C. Newby, National Automobile Co.; Benjamin Briscoe, Maxwell-Briscoe Motor Car Co.; and Roger B. McMullen, manager. Mr. McMullen said the meeting was devoted entirely to show matters and the discussion of the allotments of space. The E. W. Bliss Co., of Brooklyn, the Whitehead torpedo people, was elected to membership and so was the Moone Motor Car Co. of St. Louis, an offshoot of the Moone Buggy Co., an extensive carriage building concern. This raised the membership pin the association to twenty-two. Mr. McMullen said 300 models would be exhibited at the independent show.

Digitized by Google

AIRS VIEWS ON STEEL

French Expert Reads a Paper On Use of the Metal in Constuction of the Automobile

Washington, D. C., Nov. 24—In consideration of the fact that American automobile manufacturers have taken decisive steps to discover the best steel for their use by engaging an expert to coöperate with a man appointed by the steel trust, the paper read at a recent meeting of the British Iron and Steel Institute at Sheffield by M. Guillet, of Paris, on steel for motor car construction in France is particularly interesting. In part, according to advices received by one of the branches of the federal government, the paper was as follows:

"No one could question the fact that the industry which, during the last few years, has had most influence on the metallurgy of the special steels was that of motor-car construction. The special steels actually in use in France for the construction of motor cars could be classified as: 1, steels with low percentages of carbon and nickel pearlitic steels, used for parts requiring cementing and quenching, such as shafts and gears which engage directly; 2, steels with medium percentages of carbon and low percentages of nickel, used after quenching and reheating, and for a large number of parts, such as shafts, gearing and pinions; 3, steels low in carbon and with high percentages of nickel, used for valves; 4, chromium steels, with high carbon and low chromium percentages, used for bearings; 5, silicon steels; 6, nickel-chromium steels, and, 7, a new steel known as NY, the composition of which has not been published."

A man with practical motor car building experience, and, in several countries, a great experience in the manufacture of steel articles, recently said there was no great need for increase of resistance to shock in steel used for the larger type of automobiles. The present steel was serving very well, he held. It is, however, important for the smaller cars with lighter parts. He said he was able to obtain satisfactory British steel, that he did not think the French were able to get better steel than he was using, and that a German automobile firm, owing to important connections with the steel trade, had been able earlier than the rest of motor manufacturers to get the assistance of the best German steel makers in the selection of the right steel for each part and its kind of work in motor cars. This expert assistance of steel makers has been valuable in bringing this car to the front; but now that the automobile industry was one in which the development of sales would profit any steel company, the same German steel companies and other steel companies, including British, having awakened to the possibilities of the market, are offering the kinds of steel to automobile builders they need and making clear regarding each kind its best use.

The demand in America at present is for high carbon steels suitable for crank shafts for high speed four-cylinder, four-cycle motor, as in this part of the automobile frequent weakness is found, crank shafts frequently giving way with a too sudden starting. Americans are also searching for a grade of steel suitable for valves. In this grade of steel the carbon percentage should be small and nickel percentage high, a composition that resists pitting most successfully and stands high temperatures without serious depreciation of its cohesion.

Experiments in the manufacture of these particular grades of steel have been conducted in Europe for over 4 years and most satisfactory results have been obtained, but the limitations of the supply and the cornering of the market by a few of the leading concerns succeeded for a time in keeping the masses of manufacturers out in the cold—they not even being able to buy a supply at any price.

BRITONS POOR ROAD MAKERS

Washington, D. C., Nov. 24—Road experts connected with the United States department of agriculture are much interested in a recent official report concerning the results of unintelligent, unscientific road repairing along the Thames in London. This great road along the Thames, one of the most important thoroughfares in London, known as the Thames embankment, was very rough, and efforts were made to remedy this condition. One would think that a sound knowledge of roadmaking would surely be displayed in repairing such a thoroughfare as the Thames embankment, but the methods pursued were far from being scientific. After the scarifier had been at work and the road torn up, loads of blue metal were dumped down, but this stone was of a very uneven nature, both as to size and shape, many of the pieces being long and narrow, while others were small and approximately cubical, and there was additionally a large proportion of irregularly shaped stones. The loads were roughly spread across the roadway, and in many cases the wheel ruts of the carts were not even raked out. Over this chaotic heap was strown—shade of Macadam—pulverized clay. Water was then copiously flooded on to this interesting mass to induce the clay to get in between the crevices or chasms in the roadway. This it speedily did, although naturally much remained as mud on the surface. Then the steam roller got to work, and soon the roadway looked quite smooth and nice. But it did not stay in that condition long and a spell of bad weather soon made it as rough as ever.

EMPIRE STATE PROJECT

Buffalo, N. Y., Nov. 27—One of the latest rumors in connection with the Niagara, N. Y., Lockport and Ontario Power Co.'s electrical transmission line is that it is the intention of the company to build a broad, smooth roadway, similar to the state roads, and to operate a line of electric vehicles, including large motor car buses and touring cars, as a public carrying service for passengers. A complete and extensive transportation system will be established, with a regular schedule, beginning at Lockport and running through to Rochester. From Lockport it is also intended to build another roadway to Tonawanda and Buffalo along the right of way obtained for the branch line.

ROLLS AS A PIONEER

Prominent Englishman Lectures on His Adventures in Early Days of Automobiling

London, Nov. 18—C. S. Rolls is one of society's favorites in the automobile way and, like a wise young man, he has turned it to commercial account by opening into the motor car trade in the west end of London. He has something of genius, too, in getting the press limelight always on or about him. We are now in a rather dull period for trade since the selling season has ended and until some time after the show it will not be reopened. Under such circumstances it was a smart move on the part of Lord Langattock's heir to lecture this week before the high born dames of the Ladies' Automobile Club on his motoring experiences. These have been long varied and exciting and Rolls is no bad raconteur.

Rolls' lecture was illustrated by a variety of lantern slides from his unique collection. He commenced by showing an illustration of an Italian vehicle built as early as 1649, which was propelled by springs wound up by manual labor. Descriptions were then given of early attempts at mechanical road locomotion, including a vehicle driven by mechanical legs; for in the early days it was not believed that sufficient adhesion could be obtained to propel a car by applying power to its wheels until Trevithick, the father of the high-pressure engine, demonstrated this in the year 1800. Trevithick's steam carriage was the first successful vehicle that carried passengers along an English highway. Illustrations were shown of steam coaches built by Hill, James, Gurney and Hancock. The two last named ran regular services of motor omnibuses about the year 1830 between Gloucester and Cheltenham, Glasgow and Paisley, and in various parts of London. These early vehicles proved themselves commercially and mechanically successful until they were driven off the roads by popular prejudice and opposing interests. Large heaps of stones were laid across the routes to obstruct the vehicles, and prohibitive tolls were exacted at all turnpikes. At one turnpike, for instance, where a coach-and-four paid $1, a steam coach was charged the sum of $11.72.

A select committee of the house of commons appointed in 1831 reported completely in favor of the new locomotion. Notwithstanding this, an act was passed which made it virtually impossible to run steam vehicles with any commercial success, and between that period and 1896 anything running on the highway that carried its own power was tied down to a maximum speed limit of 4 miles an hour in the country and 2 in towns, and a man to walk in front waving a red flag.

The lecturer narrated some experiences he had had in the early days of motoring, prior to the passing of the 1896 act, which abolished the 4-mile an hour and red flag regulations. Before radiators were fitted a car could never run more than 10 miles; the cooling water then had to be changed. Rolls, who brought to Cambridge the first motor car ever seen there, remarked that

Digitized by Google

he had frequently got into trouble through getting back late at night after a breakdown, but that he had squared numerous dons and others by taking them out on the car. Many of these runs, however, ended in pushing the car home with the assistance of his venerable passengers. He described some hair-breadth escapes, including a runaway down one of the steepest hills to be found in Gloucestershire.

Rolls told of his first ride of any length in this country prior to the passing of the 1896 act. He had already been summoned and fined for exceeding the legal limit of 4 miles an hour and for not having a man walking in front waving a red flag. His first run to Cambridge, which took place one night, was full of incidents. He started by giving a friendly policeman a lift. Frequent stops had to be made to empty out the water which boiled and take in fresh water, which generally had to be got by climbing over into private gardens, and so forth. When the car was stopped in a village it made so much noise that everyone woke up, and infuriated night-clad figures appeared at the windows. Towards the end of the journey the occupants of the vehicle all fell asleep, including even the driver, a rude awakening being caused by the feeling of the car bumping on the grass at the side of the road. The journey was eventually accomplished in 11¾ hours.

In November, 1896, the night before the run from London to Brighton to celebrate the emancipation of the motor, an axle broke and the car overturned with a tremendous crash; the occupants, however, escaped with a bad shaking. Another run in the same year was from London to Mr. Rolls' home in Monmouthshire, which occupied 3 days—a fortnight's work having been devoted to the preparation of the car. During this run, when descending Birdlip hill, one of the most dangerous descents in the country, all the brakes gave out, and the car bounded forward out of all control, skidding and swerving round every corner. The car had a canopy, which made it very heavy, in addition to which there was a glass screen in front, that, coupled with the darkness which was coming on, made it extremely difficult to steer round corners on a strange road. At one moment a light was seen straight ahead, and it was thought that a collision was unavoidable, for it would have been impossible in the narrow road to pass another vehicle. Happily, however, the light turned out to be a house and Rolls went on his way rejoicing.

FARMERS COMING AROUND

Philadelphia, Pa., Nov. 25—The automobile took up a surprisingly large portion of the deliberations of the National Grange of the Patrons of Husbandry, which closed its sessions at Atlantic City on Wednesday of last week. Naturally much opposition—oftentimes bitterness—was apparent in the discussions, some of the delegates favoring drastic legislation governing the operation of automobiles on country roads, but on the last day a much more generous spirit seemed to prevail and the conservative element downed the extremists. The Grange recognized the motor car as "an innovation in modes of travel which must be accepted."

GOOD ROADS THE CRY

Michigan Has the Improvement Fever and Towns and Villages are Seeking State Aid

Grand Rapids, Mich., Nov. 27—Michigan is being swept by a good roads reform. From the upper peninsula to the Indiana boundary line and from Lake Huron to Lake Michigan the cry for good roads is heard. Counties are taking it up individually and in some cases the townships are acting on their own responsibilty. The villages and townships are taking advantage of state aid in the bettering of their highways and the reform will result in Michigan having the best roads in the country, it is expected.

Since the village of Shelby in Oceana county received a check for $1,250 from the state for completing 1¼ miles of stone road during the past year, many villages and townships are making efforts along the same lines. The voters of Benona township in the same county are even now considering a proposition to bond the township for $10,000 to build four miles of macadam road in the near future.

The village of Crystal was the scene of a good roads meeting on the evening of November 24 at which the proposition of adopting the township road system was discussed. It is probable that it will adopt this system and a great many other villages are expected to follow in its footsteps. During the year 1905 there has been nearly $35,000 spent in Oceana county alone toward the betterment of the roads.

From Ontonagon county, 'way off in the northwestern corner of the upper peninsula, comes the news that the County State Land Road Association has been formed for the purpose of bettering the highways. Jerome Brown of Matchwood is president. While this looks like a local affair, as it would seem that no automobiles would ever penetrate to this section of the wolverine state, the impression is incorrect, for, in spite of the thick timber and the unfavorable climate, the automobile has already become firmly established in the upper peninsula.

In Muskegon county, where it would seem as if nothing could be done for the roads, on account of the deep sand, the townships are discussing the advisability of bettering the highways. The same can be said for almost every county in the state, excepting that the roads in the inland counties can be improved with a great deal less labor.

State Highway Commissioner Horatio S. Earle is very enthusiastic over the prospects for better roads. In addressing the Normal Farmers' institute of Ingham county, at Lansing recently, he explained the new road law. He declares the county road law and the state reward road law provides the best system of making roads in the United States. Under the law, if adopted, a 1 mill tax is spread on all property in the county and the tax is expended by the county road board in keeping in repair and building such roads as are deemed necessary to adopt as county roads.

Mr. Earle says the law needs some amendments but that these will undoubtedly be made at the next session of the legislature. It has already been adopted by twenty counties in the state and has been found ideal. The state also gives aid toward the establishment of good roads by giving premiums for work done and this will protect the townships and counties in their expenditures. With all this encouragement it would seem that the taxpayers would fairly tumble over each other in their efforts to make for Michigan a good roads system that will compare favorably with any in the United States.

ROAD BOOK OF RIGHT SORT

Cleveland, O., Nov. 26—The Cleveland Automobile Club, through its secretary, Charles Marvin, is preparing to issue a road book covering all the important roads in Ohio. In connection with it will be a series of maps of the different counties, showing the roads, their condition in various kinds of weather, points of identification, heavy grades, hotels, eating houses, garages and fuel supply depots, telephone lines, electric lines and other detailed information of value to tourists. It is believed it will be the most complete book of its kind ever issued in any state and it will be published for the members of the club and its friends. Mr. Marvin has spent many months in procuring and compiling this information. The system he used was long and arduous, but it has been thorough and effective. First he wrote to editors of papers in all important towns asking for the names of several enthusiasts in the town. Then he wrote to each of these parties in the same town asking for the same line of information. In this way he secured a great variety of information from each district. He has made several trips over some of the most important routes.

REGISTRATION MADE EASY

Philadelphia, Pa., Nov. 27—The Automobile Club of Philadelphia has made an arrangement with the automobile bureau of the state highway department of Pennsylvania whereby the individual members of the club will not be compelled to journey to the state capital to secure their license tags, but may fill out applications at the club's quarters and have them forwarded. The new law, which will go into effect January 1, allows the holder to use his license tag on any machine he may choose to drive, but while in Pennsylvania no machine can legally carry any tag but that issued by the state. The 1906 license will also be recognized in New York state without further registration. The fee, however, will be $3 instead of $1 as formerly. Non-club members are wondering whether some arrangement cannot be made whereby they may be similarly accommodated without being compelled to travel to Harrisburg, which means $5 carefare and a day lost. License blanks will be issued in about a week.

TALKS SHOW FOR PARTS MEN

Chicago, Nov. 28—A. M. Andrews, 184 La Salle street, secretary of an organization styled the Automobile Parts, Appliances and Accessories Co., of Chicago, announces he is preparing to hold a show for this branch of the industry in Chicago next September or October. He states he has promises of support from the trade.

Digitized by Google

GARDEN SHOW ATTRACTS MANY

Accommodations Are Found for Only 220 Exhibitors, Twenty-one Having To Go on Waiting List—Thirty-two Pleasure Vehicles on Main Floor—Maps Not Ready

New York, Nov. 25—It has been found impossible to find accommodations for all the applicants for space at the Madison Square garden show and twenty-one have been placed on the waiting list. This appears from the announcement issued to-day by the Licensed Association of Automobile Manufacturers of the exhibitors and allotments for the sixth annual show in the garden, which will be held January 13-20, 1906.

Provision has been made for 220 exhibitors. In making the allotment the show committee, which is made up of George Pope, M. I. Brock, C. R. Mabley and M. L. Downs, has placed thirty-two exhibitors of pleasure vehicles on the main floor, and ten in the restaurant. In the basement there will be nine exhibits of commercial wagons. Exhibitors of parts, accessories and machinery have been placed in the balconies, raised platforms and concert hall.

Efforts are being made to secure space for those who are now on the waiting list, but exhibitors are not prone to give up any space alloted them, for they have already been cut down to the limit. The committee could well have sold half as much more space as it had, notwithstanding the armory exhibition.

The importers' section embraces Smith & Mabley, Mercedes, Panhard and Renault; Sidney B. Bowman Automobile Co., Clement-Bayard; American Darracq Automobile Co., Darracq; Hollander & Tangeman, the Hol-Tan Co. to be, Fiat; Auto Import Co., Rochet-Schneider; de Dietrich Importing Co., de Dietrich, and Gallia Electric Carriage Co., Gallia electric.

Maps showing the exact space allotment are not yet ready for publication. The exhibitors will be:

J. Stevens Arms & Tool Co.
Walter Automobile Co.
Apperson Bros. Automobile Co.
Cadillac Motor Car Co.
Royal Motor Car Co.
Waltham Manufacturing Co.
Northern Manufacturing Co.
Pope Manufacturing Co.
Elmore Manufacturing Co.
Olds Motor Works.
H. H. Franklin Manufacturing Co.
Electric Vehicle Co.
Buick Motor Co.
Sidney B. Bowman Automobile Co.
Smith & Mabley.
American Darracq Automobile Co.
Decauville Automobile Co.
Hollander & Tangeman.
Auto Import Co.
George N. Pierce Co.
Packard Motor Car Co.
Autocar Co.
Peerless Motor Car Co.
Winton Motor Carriage Co.
E. R. Thomas Motor Co.
Haynes Automobile Co.
Smith & Mabley Manufacturing Co.
Locomobile Company of America.
F. B. Stearns Co.
Hewitt Motor Co.
Buffalo Electric Carriage Co.
Studebaker Automobile Co.
Vehicle Equipment Co.
Columbia Buggy Co.
Matheson Motor Car Co.
De Dietrich Importing Co.
Pope Motor Car Co.
Electric Vehicle Co.
Gallia Electric Carriage Co.
Vehicle Equipment Co.
Cantono Electric Traction Co.
Pope Motor Car Co.
Knox Automobile Co.
Diamond Rubber Co.
Hess-Bright Mfg. Co.
Goodyear Tire & Rubber Co.
C. F. Splitdorf.
G & J Tire Co.
Gray & Davis.
The Veeder Manufacturing Co.
Hyatt Roller Bearing Co.
Whitney Manufacturing Co.
Brown-Lipe Gear Co.
Pennsylvania Rubber Co.
Motsinger Device Manufacturing Co.
Baldwin Chain & Manufacturing Co.
Firestone Tire & Rubber Co.
Steel Ball Co.
National Carbon Co.
Byrne, Kingston & Co.
Warner Instrument Co.
New York & New Jersey Lubricant Co.
Springfield Metal Body Co.
Manufacturers' Foundry Co.
Briscoe Manufacturing Co.
International A. & V. Tire Co.
Parish & Bingham Co.
McGiehan Manufacturing Co.
Oliver Manufacturing Co.
Utility Co.
R. E. Hardy Co.
Spicer Universal Joint Manufacturing Co.
F. H. Wheeler.
Atwater-Kent Manufacturing Co.
Motor Car Specialty Co.
Morgan & Wright.
Phineas Jones & Co.
Jones Speedometer.
Swinehart Clincher Tire & Rubber Co.
Shelby Steel Tube Co.
Light Manufacturing & Foundry Co.
Brennan Manufacturing Co.
Warner Gear Co.
Atwood Manufacturing Co.
Herz & Co.
R. E. Dietz Co.
Timken Roller Bearing Axle Co.
Twentieth Century Manufacturing Co.
Pittsfield Spark Coil Co.
American Ball-Bearing Co.
Standard Welding Co.
Aurora Automatic Machinery Co.
Wray Pump & Register Co.
Autocoil Co.
Badger Brass Manufacturing Co.
Fisk Rubber Co.
Dayton Electric Manufacturing Co.
Whitlock Coil Pipe Co.
Rose Manufacturing Co.
Midgley Manufacturing Co.
Hartford Rubber Works Co.
B. F. Goodrich Co.
Continental Rubber Works.
Chandler Co.
Edward Smith & Co.
National Battery Co.
C. Billy, S. & M.
M. Soffan, Hercules tire.
Harry A. Allers & Co.
Auto Brass & Aluminum Co.
Roth Jack & Tool Co.
Anderson Spark-Plug Co.
A. H. Funke.
Patterson, Gottfried & Hunter.
L. J. Mutty Co.
Auto Supply Co.
The Midvale Steel Co.
William Cramp & Sons Co.
Thomas Prosser & Son.
Bethlehem Steel Co.
Rushmore Dynamo Works.
Way Muffler Co.
Judson & Downing Co.
Duff Manufacturing Co.
E. J. Willis Co.
Charles E. Miller.
Columbia Lubricants Co. of New York.
Dac Automobile Supply House.
English & Mersеck Co.
Michelin Tire, American Agency.
Samson Leather Tire Co.
Continental Caoutchouc Co.
Motor Car Equipment Co.
Leon Rubay.
Meyrowitz Manufacturing Co.
Albert Champion Co.
New York Sporting Goods Co.
Post & Lester Co.
Republic Rubber Tire & Shoe Co.
Barnes Gear Co.
Noera Manufacturing Co.
Lackawanna Leather Co.
F. W. Ofeldt & Sons.
Imperial Brass Manufacturing Co.
Sibley & Pitman.
Gas Engine & Whistle Co.
Witherbee Igniter Co.
Semi-Dry Battery Co.
Vacuum Oil Co.
William J. Dunne Co.
Pantasote Co.
Sprague Umbrella Co.
Standard Roller Bearing Co.
Consolidated Manufacturing Co.
Iron Clad Manufacturing Co.
Republic Rubber Co.
Gilbert Manufacturing Co.
Schwarz Wheel Co.
Wheeler Manufacturing Co.
American Electric Novelty & Manufacturing Co.
Belden Automobile Transmission Co.
McCord & Co.
Edmunds & Jones Manufacturing Co.
A. W. Harris Oil Co.
Valentine & Co.
S. F. Bowser & Co.
Prest-o-Lite Co.
Gabriel Horn Manufacturing Co.
Remy Electric Co.
Lunkenheimer Co.
Weed Chain Tire Grip Co.
Chicago Battery Co.
Holly Bros. Co.
Webb Co.
Hartford Suspension Co.
C. T. Ham Mfg. Co.
Eastern Carbon Works.
Diamond Chain Mfg. Co.
Hatch & Brittin.

Digitized by Google

Hydraulic Oil Storage & Distributing Co.
Springfield Auto Top & Upholstering Co.
National Sales Corporation.
Horace E. Fine.
Heinz Electric Co.
A. R. Mosler & Co.
Manhattan Storage Co.
H. & F. Mesinger Manufacturing Co.
E. M. Benford.
Railway Appliances Co.
Ventilated Cushion Co.
Cooper Hewitt Electric Co.
Carpenter Steel Co.
American & British Manufacturing Co.
Henry Hooker & Co.
New York Carriage Top Co.
Automobile Top & Cover Manufacturing Co.
Michigan Steel Boat Co.

CHANGE CUBAN CARD

New York, Nov. 28—Special telegram—At a conference on the Havana program Bowen, Senor Conill and Senator Morgan amended the schedule so as to have the sprint races on Monday, February 12, which will allow the racing men and visitors to catch the steamers which leave Tuesdays instead of Mondays. Conill has given a silver plaque for a mile race, to be known as the Conill trophy, and leased the 130-horsepower Clement-Bayard from Clement, with Villeman, a French crack, as driver. Senor Terry, who has raced abroad, will also defend the Havana cup with a big Mercedes racer, with himself as driver. Joe Tracy sailed today with a commission from an unrevealed customer to buy the fastest racer obtainable. It is rumored that Alfred Vanderbilt has a 250-horsepower racer building in this country for the Ormond meet. The Vanderbilt Locomobile will be in Florida with a factory driver.

HOME FOR BAY STATERS

Boston, Mass., Nov. 24—On December 1 the Bay State Automobile Association is to take up new quarters at the Woodland Park hotel, Auburndale, its board of officers having this week leased that portion of the hotel known as the casino. This embraces the billiard room, bowling alleys, a large reception room and a private cafe—just what the club has long desired. The hotel is about 8 miles' ride from Boston proper, over the finest of boulevard roads, and in the heart of what is known as the riding district. The new quarters will be dedicated to the cause of motoring by the holding of a gigantic smoker about the first of the month. Similar events will follow each other in rapid succession throughout the winter season.

JOLLY FOR JOLIETERS

Chicago, Nov. 27—The Joliet & Aurora Electric Railway connects these two Illinois cities and between them passes through several small places from which it is the intention of the company to run automobile feeders to outlying places distant from the electric line and thereby greatly increase the earnings of the road. One of these feeders will be from Yorkville to Plano and Sandwich. Over the route it is the intention to run two fourteen-passenger buses, each of which is expected to make the trip one way in 1 hour.

LAUGH IS ON THE EARL

Russell Tattles on Fellow Motorists and Is Himself Fined Later On for Scorching

London, Nov. 18—About a month ago Earl Russell, who ranks as one of the leaders of English automobiledom, as instanced in the membership of the Automobile Club of Great Britain and Ireland, was stirred to wrath by the reckless inconsiderateness of a fellow motorist who drove past him into Kingston-on-Thames at a pace that must have been hot to have shaken up a hardened sinner like the earl. Accordingly, he laid information against the offender and gave up a day to having him punished. The Kingston bench was loud in its commendation of the earl and in fining the offender $25 said some nice things about his lordship's public spirited action. But the British automobile forces were not so enthusiastic. They took up an attitude of reserve bordering on disapproval and went so far as to suggest that the police should be allowed to do its own dirty work without any assistance from motorists.

That ended the situation, apparently, but it had a sequel which was only disclosed a short time ago. This time it was Earl Russell who was the delinquent, and the court was at Guildford, in Surrey, also, and only 20 miles further on the Kingston road. He was accused by the police of having driven his car through a police trap at the rate of 26 miles an hour. He admitted the probability of the speed, but took occasion to point out that no road user was incommoded, much less endangered, and urged that the offense was merely a technical breach of an absurd rule. He went on to shake a monitory finger at the Guilford bench, whom he accused of having already fined every one of eighty drivers summoned for similar offenses under similar circumstances, their total purgings reaching nearly $2,500 in 7 months. But so far as one could judge by the result he seemed to have merely added insult to injury, for the fine for his breach was promptly assessed at $50 and costs. He appealed for a new trial, but just the same every motorist in London laughed contentedly at the turnup, which has shown to Earl Russell the ingratitude of police and magistrates. The incident is not an elevating one, and while, on the one hand, it indicates that those who live in glass houses should not throw stones, it also goes to prove that even the leaders of automobilism designedly flout the laws that have been laid down for their government. They arrogate to themselves the right to drive at a pace in excess of that conceded by law when they like, and that fact is doing more to arouse popular antipathy to motoring than the actual indiscretions would otherwise have caused. It causes the public to look with indulgence if not approval on the concealed police trap, for if private individuals put themselves above the law and there is no other means of bringing them to their proper senses, then the trap is not merely justifiable but necessary.

If sensible motorists as a class would lay information against the real road hogs in their ranks the public would soon turn against the police trapping methods. But these motorists believe that the law will be altered to suit their views and so rest on their oars. It is practically certain, however, even at this early hour, that any alteration in that way will be accompanied by restrictions and conditions which will render police duties much more simple and punishment more severe. It is said that an automatic and visible speed signal will be insisted upon in all cases where a self-registoring speed indicator open to the inspection of any police officer is not carried. In that instance the remedy will be worse than the disease so far as the steady-going motorist is concerned, for, unless he consents to carry a signal that will put him in jeopardy of prosecution on every slight declivity, he will have to put up with what is practically certain to be a self-condemnatory evidence. The legal limit may be raised to 25 miles per hour—and it may not; but the speed meter and the speed register is bound to come. Out of that belief quite a number of instruments to meet the case have been devised and the board of trade is searching for one which it will be in a position to insist upon. So far it has not been successful, as its conditions are not exactly those which will go to make a commercial article until the law is altered.

The motorists are putting up a great fight before the motor car commission and are straining every nerve to get the speed limit altered to 30 miles per hour. They have employed skilled sporting timekeepers to test the speeds of the electric trams that are spreading so fast throughout England, and one result is certain to be the imposition of recording instruments on these vehicles also. As it may interest motorists on your side to know how our tram traffic moves, I append some of the certified figures put before the commission.

Town	Number of cars	Average speed of all cars included in previous column	Average speed of six fastest cars	Speed of the fastest car timed
London, Streatham-hill	22	18:05	20:45	21:22
Ealing	84	13:52	17:44	18:44
Newport	56	12:04	16:16	17:25
Manchester	20	17:01	20:36	21:25
Leeds	34	16:41	22:00	22:70
Cardiff	39	14:18	16:58	17:30
Derby	10	15:75	17:06	18:00
Cheltenham	20	12:46	13:50	14:06
Bath	27	13:28	15:27	16:07
Bristol	38	12:01	14:76	15:00

It will be seen that the larger the population the greater the tram speed—and that it is appreciated by the business man most of the critics will vouch.

We are told here that the French government has practically decided to issue their forms of drivers' license graduated as to the horsepower of the car driven. Class A will only be licensed to drive cars of less than 8 horsepower; class B will include cars up to 24 horsepower, and class C cars above 24 horsepower.

WILLIE K. AT ORMOND?

New York, Nov. 28—Special telegram—It is reported today from several sources that W. K. Vanderbilt, Jr., is, with Manager MacWilliams, of the Laroche company, at Ormond trying out the speed qualities of the Hemery Darracq on the beach course at that place.

Digitized by Google

1906 POPE-TOLEDO

THE 35-40 horsepower Pope-Toledo for the coming season is another machine in which numerous important changes over present construction are met. The Pope Motor Car Co., of Toledo, O., has had the machine under severe test since the midsummer, during which time it has covered more than 8,000 miles, and is reported to have given satisfactory tests of fuel. In a test run of 782.7 miles 49 gallons 3 quarts of gasoline were consumed, an average of 15.8 miles to the gallon. The last 210 miles of the road were in fairly good condition and for this distance 9.8 gallons of gasoline were used, making an average of 21.5 miles to the gallon. During the test two passengers and 800 pounds of sand were carried.

The noteworthy feature of the new machine is the new motor, with valves in the cylinder heads, the exhausts being operated by overhead rocker arms. The automatic inlet valves and copper water jackets remain. The gear box remains the same except in that an internal gear is used instead of clutch teeth in getting the direct drive, and an interlocking scheme has been added. Other new features noted are new body design, auxiliary gasoline and oil tanks, internal regular brake, I-section axles in front and rear and straight frame side pieces. In addition to the 35-40 horsepower machine the company has a 20-horsepower side entrance car in which the cylinders are cast in pairs, with integral water jackets instead of copper jackets. In the largest model, a 50-60 horsepower machine, the motor and gear box design are the same as in the 35-40 horsepower car.

The running gear carries with it most of the marks of 1906 construction, conspicuous among which is the 104-inch wheel base and the use of four semi-elliptic springs, the front pair being practically flat and the rear pair thrown outside of the frame pieces. The sub-frame for carrying the motor and gear case is retained and instead of offsetting the main frame pieces alongside the motor they are made straight. I-section front and rear axles, made from steel and subjected to a tensile test of 110,000 pounds per square inch, differ from the present style. The front axle carries Lemoine type steering knuckles and is dropped in Mercedes fashion, one drop between the knuckles and seatings for the springs and a central drop between the springs. The rear axle is dropped inside the spring seatings, giving plenty of room for the vibration of the body. Thirty-four by 4-inch artillery road wheels are used.

In the new motor of the vertical four-cylinder type the bore and stroke are 4⅝ and 5¼ inches, respectively, and at 900 revolutions 35 to 40 horsepower is produced. A novelty is met in making the cylinders with the wall parts A made separately, but with the heads B cast in pairs. The well-known Pope-Toledo copper waterjackets C remain, the top parts acting as gaskets between the top of the walls A and the heads B, the bolts D uniting the three parts. By placing the valves side by side in the top of the heads, the automatic inlets at the right and the exhausts at the left, the head pieces B are of considerable depth to make room for the valve cages, which are separate, one for the inlet and another for the exhaust. These cages have a ground fit in the cylinder heads and are slightly tapered, like an inverted cone, to give an easy dropping fit into the casting. The accessibility of both inlet and exhaust castings is one of the features of the motor, not over 40 seconds being required to remove an exhaust cage and only a little more time to take the inlet cage out. A double yoke serves for holding the cages in position, one end resting on the inlet cage and the other on the exhaust cage, the yoke itself being held to the cylinder head by a horizontal bolt, the end of which may be seen at M. This bolt passes through the center of the yoke which is pivoted thereon. In the end of the yoke above the inlet cage is a vertical setscrew which passes through the yoke end and rests on the inlet cage, so that tightening the screw raises that end of the yoke and forces the other end down upon the exhaust valve cage, thus anchoring both in position. In removing the valves it is only necessary to loosen this setscrew, when the bolt M can be knocked out of position, the yoke lifted off and the cages pulled out.

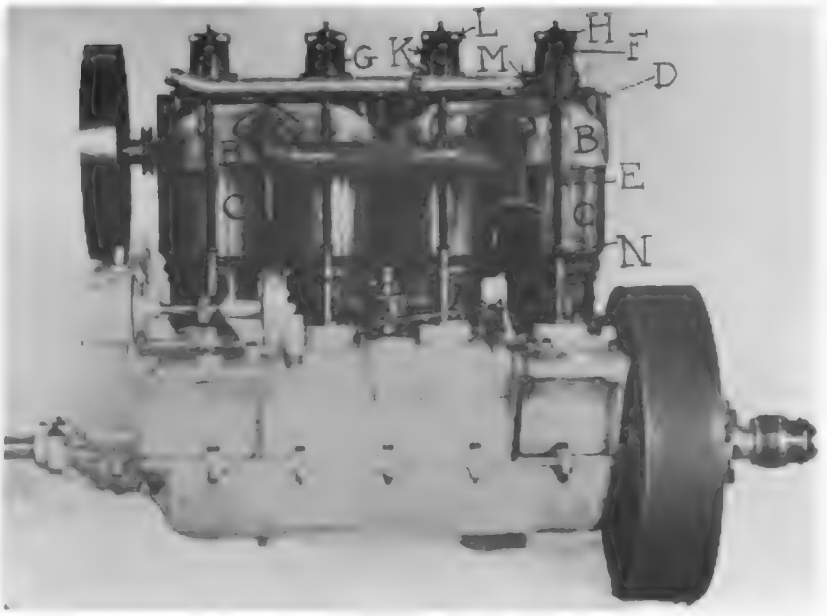
In operating the exhaust valves the push rods E carry rollers on their lower ends and rest upon cams pinned in position on the camshaft. The tops of the rods carry nuts F screwed in position and held in any position by the locknut G. The tops of the nuts F taper by a concave curve to a small part that enters the end of the rocker arm H, the end having a cone-shaped expansion with an eyehole in the center, permitting the small part of the nut F to pass through the eyehole and the tapered portion to rest against the

THE 1906 POPE-TOLEDO LIMOUSINE BODY

Digitized by Google

cone part, giving the same action as if rollers were used on the tops of the rods. Small springs N hold the rods constantly against the ends of the rocker arms. The rocker arm at its center is pivoted at L on a hardened pin working in bronze bushings and having a separate oiler on top. The end of the arm resting on the top of the valve stem is slightly rounded to give easy action on the stem. The curved arms K carry the rod L for the rocker arms. By not having the push rods E made with a yoke at the top end and pivoted to the ends of the rocker arms the valve cage removal is facilitated.

The Pope-Toledo carbureter is carried on the inlet side close to the crankcase and connects by a Y piping with the pairs of cylinder heads. In general design it is similar to that now used, the throttle being a horizontal sliding drum with deep serrations at one end, through which the mixture passes to the inlet valve piping. This drum is connected with a thumb lever working on a quadrant on the steering wheel, a similar lever on the same quadrant serving to advance and retard the spark. The needle valve controlling the flow of fuel to the spraying nozzle can still be adjusted from the outside, there being a small set wheel for varying the valve and a locknut for holding the wheel in any position. Feeding the gasoline to the float chamber is new in that it flows by gravity. The main gasoline tank, holding 12 gallons, is carried beneath the chassis frame at the rear, and within the top part of the hollow dash is a 5-gallon running tank, the other being known as the reserve. On the running tank is a glass gauge in plain view of the driver showing the amount of fuel on hand. Under the seat is an air pump operated by hand, with connection to the reserve gasoline tank. A few strokes of the pump will place sufficient air pressure in the reserve tank to force gasoline into the running tank. On the dash is a small air gauge. In the oiling scheme air pressure is used. A six-feed Hill oiler is carried on a motor arm close to the exhaust pipe, with a lead running to each cylinder, another to the gear housing the camshaft gear at the front with a branch to the

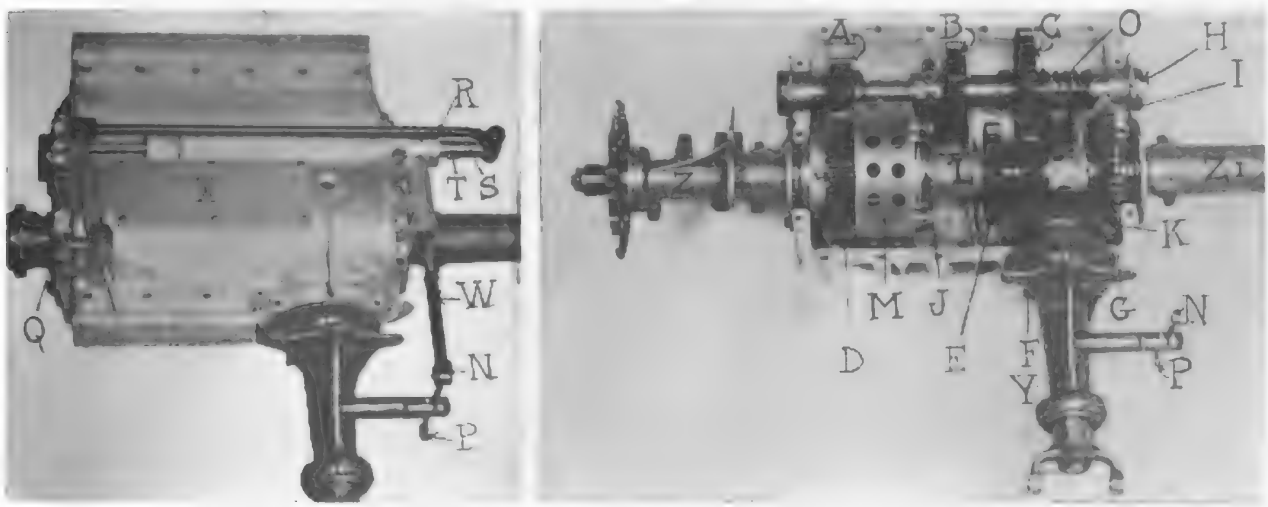


Left Side of the 35-40-Horsepower Pope-Toledo Motor

water pump and the sixth to the clutch. Each lead passes through a small sight glass on the dash. The mechanical oiler reservoir carries a limited supply of lubricant but beneath the chassis is carried a 2-gallon oil tank, supplied with air pressure from the air pump. As plain bearings are used throughout in the motor the bushings in each are grooved for conducting the oil flow, and over each bearing is a large oil receptacle, constantly filled from the splash. Each piston has an oil groove, which, together with the three compression rings, gives a good distributing system over the cylinder walls.

Jump spark ignition is retained, with current supplied by storage or dry cells, but arrangements are made for attaching a magneto. The spark plugs are carried horizontally on the inlet side, the high tension wires being supported in a fibre tube. On the exhaust side is the commutator, carried on a short shaft between the pairs of cylinders and driven through bevels by the camshaft. The revolving contact is a small roller, held against the stationary contact segments by a coil spring. From the carbureter can be noted the connections with the bottom of the steering column, the rod from the commutator casing connecting with a cross rod between the first and second cylinders, a lever arm on the right end of the rod uniting with the lever on the steering wheel through the usual bell crank and sleeve within the steering column. A four-vibrator Splitdorf coil is carried on the dash.

In the water system a centrifugal pump has been fitted, being carried low on the exhaust side and driven by a separate shaft. From this shaft is driven the fan by a circular belt. The pump draws its supply from the radiator base, delivering it to each water jacket at the right side. There is one exit at the top for each pair of cylinders, the flow being to the top of the radiator. The horizontal tube radiator has the tubes connected in sets of



Speed Change Gear Set of the 1906 Pope-Toledo, Closed and Open

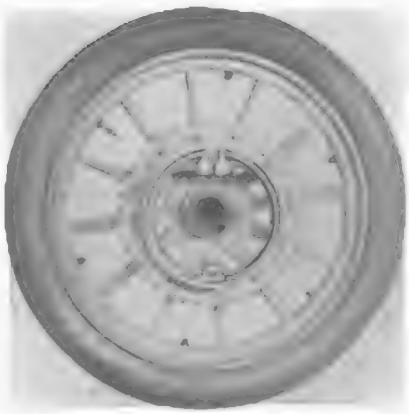
Digitized by Google

six, so that water passing from the top to the bottom goes from right to left through a set, then back through another set of six, which course is continued until the bottom is reached.

The crankcase construction is standard throughout, the crankshaft with its five bearings is carried in the top part, the base serving only as an oil pan. Side inspection plates are eliminated. The motor lugs rest directly on the subframe, and a change is noted in the main frame in having the side pieces straight throughout.

Pope-Toledo gear sets differ materially from the regular style used in double chain drive cars in that the main shaft and counter shaft within the case are carried crosswise of the car, with the inner ends of the two-part drive shafts of the differential countershaft within the casings Z and Z1 forming the main shaft of the gear box and the countershaft H parallel with and behind it. Plain bearings are used within the case for carrying the countershaft, three being used, one at either end and a third practically midway of the shaft. The crankcase is made from aluminum alloy in two parts, with the bearings between the parts. To strengthen the bottom half, it is reinforced by cross webs in the center within the case, other webs being used on the outside. The case takes its support from the main frame through cross frame pieces and in addition to this support the jackshaft brackets are hung between and rigidly bolted to vertical flanges of the side pieces of the main frame, making the case and jackshaft support rigid with the frame.

In securing the speed changes a single sliding unit of gears E and F is used. These gears slide on the sleeve L, and to this sleeve is keyed the bevel G, which is continually in mesh with gear K on the end of the propeller shaft within the casing Y. The gears A, B and C revolve with the countershaft H. Within the jackshaft housings Z and Z1 are drive shafts connected at their outer ends with the sprockets for chain drive to the rear hubs, and at their inner ends are inserted in the differential M spur gears. The large gear D is attached to the differential. It must be understood that the sleeve L with its three gears E, F and G is loose on the drive shaft within the housing Z, that the two gears E and F can slide on the sleeve but must revolve with it, so that at all times the three gears E, F and G are revolving at the same speed. For direct drive the unit E F is moved to the left, so that gear E slides within an internal gear within J, thus transmiting to the differential and through it to the two halves of the jackshaft. For second speed ahead gear E is meshed with gear B on the countershaft and the drive is then from the propeller shaft through bevels K and G to sleeve L and gears E and B to the countershaft and then to the differential through gears A and D. For slow sped gears E and C are meshed as shown and the drive is the same as in the second speed, and when reversing gear F is meshed with the idler and at the same time gear C on the countershaft is meshed with the idler, the latter being moved to the right against the tension of the spring O, which serves to throw the gear out when passing out of the reverse.



THE POPE-TOLEDO DOUBLE BRAKE DRUM

All gears in the speed changing set, as well as other parts connected with them, are claimed by the maker to be made from specially treated steel, 225,000 pounds tensile strength to the square inch. In the manufacture of this steel much experimenting has been done and time spent, but the manufacturer claims a product capable of withstanding rough usage such as received in all change speed sets.

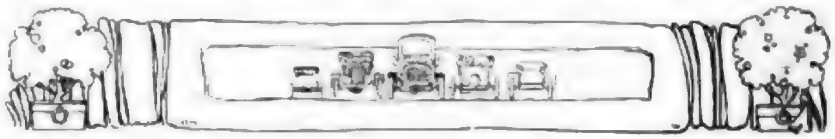
A glance at the top of the case shows the inspection plate X for examining the gears and beside it is a small opening for pouring oil into the case. In shifting gears the bottom of the change speed lever at the driver's side is connected with the double arm lever Q, which connects with the cross rod R, which is in turn connected with a rod S paralleling it within the gear case and which carries the yoke for moving the sliding gears. In connection with the rod S is the interlocking device, preventing the shifting of gears with the clutch engaged. In rod S are several small half spherical holes T. The rod W connects at N with the top arm of a double lever, pivoted on an arm carried on the propeller shaft housing. The bottom arm P of this lever connects with the clutch, so that when the clutch is withdrawn the arm P is forced backward and the arm N is drawn ahead, pulling with it the rod W, the further end of which is rounded to fit into the holes T. When the rod W is thus withdrawn from the holes in the rod S the rod can be shifted to the right or left to change gears, and the clutch cannot be engaged until one of the holes S is in line with the shaft W, so that the shaft entering the hole permits the rod W to move to the rear at the same time the arm P goes forward, allowing the clutch to engage, otherwise if the holes T are not in line with the rod W the clutch cannot be engaged, which means that when gears are not perfectly in mesh the clutch cannot be engaged.

Both of the regular brakes, as well as the two for emergency use, are carried within drums on the rear wheels, the drums being within the sprockets and bolted to alternate spokes of the road wheels. This season the regular brakes were on the jackshaft, but the new machines are novel in that both brakes of the internal expanding type operate within the same drum, which is made extra wide for the purpose. Both shoes are made narrow and are expanded on the cam principle, the emergency brakes being operated by a side lever and the others by pedal. The emergency lever is pulled to the rear in application, so that the driver can at the same time use the clutch pedal to brace himself. Both sets are interconnected with the clutch, the application of either sets releasing the clutch. Metal to metal surfaces are used in each set.

The body design differs materially from that of 1905. The tonneau is made roomy. There is accommodation for three in the regular seat and a lift seat has ample room for a couple more, making the seating capacity seven. The lift seat is a neat device carried on a pair of uprights pivoted at top and bottom and held in position by a locking brace rod. When not needed the seat rests in the front of the tonneau and can be used as a footboard. The side entrances are wide and in each is a leather pocket. Body lines are characteristic, heavy curves with sharp angles being combined. The back has square corners, with three panels and a pronounced forward curve at the bottom. Back fenders take the curve of the wheels, the front are large and readily detached if needed to examine the motor. Both bonnet and dash conform in shape to the radiator, which at the top has a decided angle. Heavy upholstering is used throughout and all standard colors are furnished. As a protection against mud splashing past the footboard and fenders onto the body leather flaps secured to the frame side pieces, have their other sides fastened to the inner sides of the running board and fender.

The Pope-Toledo type XII limousine, illustrated on another page, is a fully equipped vehicle, made along 1906 lines. It has roomy side entrances, and is upholstered and finished according to the purchaser's specifications. The enclosed compartment has such accessories as speaking tubes, silk curtains, drop windows, anti-rattling devices, eight candle power electric lamp, lift seat for two additional passengers, and other accepted limousine requisites. The demand for this style of machine is showing a marked increase, many buyers preferring it to the open or cape top touring car.

A tendency noted in this new Pope model is the comparative light weight for horsepower carried. A year ago 1 horsepower for every 100 or 110 pounds of car weight was considered favorable construction. This ratio is now a matter of the past and in this car there is 1 horsepower for every 54 pounds of weight. Throughout other parts of the machine similar weight reductions are made.



Digitized by Google

STORIES OF LITTLE MOTOR TOURS

ROUGH IT OVER BAD ROADS

A conquest of some of the worst roads in the states of New Hampshire and Maine has recently been achieved by a party of Bostonians, who have just returned from rather an extensive trip through that country. The party consisted of Mr. and Mrs. D. R. Harvey, Miss Gladys Harvey, George W. Harvey and W. P. Stahl, and they made the journey in a Stanley touring car.

In their travels through the eastern part of Massachusetts and through New Hampshire and to the wilds of Maine the party met with many interesting experiences, but fortunately were not compelled to lose any time owing to the condition of the roads, which in spots were particularly bad. Nor did they experience any trouble whatever with their car or their tires, everything going as smoothly as could be desired.

The party, all in one car, left Boston at 8 o'clock, going direct to York, where lunch was eaten. The time of arrival was noon, the average speed of the morning trip being 20 miles an hour. Portland was reached early that evening, and the night was spent there. The following morning the start was made for Bremen, and during the day's ride the party encountered all sorts and conditions of roads and went some 25 miles out of the way in order to cross the Kennebec river, owing to the toll bridge at Wiscasset having been abandoned.

The party spent a couple of weeks in Bremen, touring to different places of interest thereabout, and proving to the satisfaction of the natives that, although the roads were not in the best of condition, an automobile could travel over them with safety and dispatch. The return trip was made in excellent time, the run from Bremen to Portland being made in less than 6 hours' running time. The greatest trouble experienced by the party was the lack of sign boards en route and the general inability of the drivers to take care of themselves as well as their fractious horses; in fact, the main trouble, according to the motorists, was with the drivers, and not with the horses.

THROUGH TWELVE STATES

Mr. and Mrs. Lyman W. Welch and Mr. and Mrs. J. W. Shank, of Grand Rapids, Mich., have returned from a 7 weeks' trip through twelve different states, in which 2,850 miles were traveled in Mr. Welch's 12-horsepower Thomas without a punctured tire, accident or hour's delay. The tourists started from their home in Grand Rapids, driving to Detroit, where they took the boat for Cleveland, O. From Cleveland they drove to Pittsburg, and then proceeded until they struck the old national pike which runs from St. Louis to Washington. After traveling 200 miles, which was one continuous run up and down hill, they shipped the machine to Washington by rail, as the road through the mountains was Jersey. From there they went to New York, to Baltimore, Philadelphia, Atlantic City, Asbury Park and other famous resorts in New Jersey. From there they went to New York, spending a week in that city. From New York they drove to Boston, going through Albany, Syracuse and Schenectady. From Boston they ran to Buffalo, where they shipped the machine to Detroit. They again drove across Michigan to Grand Rapids, where the long trip ended.

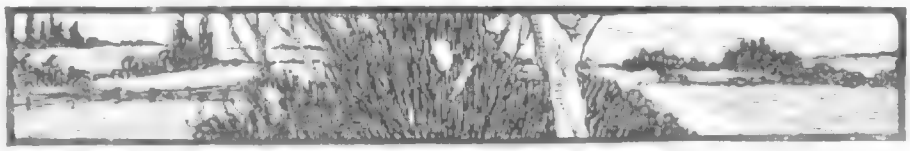
OUT OF WASHINGTON

Members of the new Automobile Club of Washington are taking advantage of fine fall weather by participating in club runs, promoted by the road officers. The highways leading out of the capital afford plenty of opportunity to enjoy motoring to its fullest extent, and the Washingtonians have not been slow to grasp at their opportunities. One of the recent jaunts was particularly pleasant.

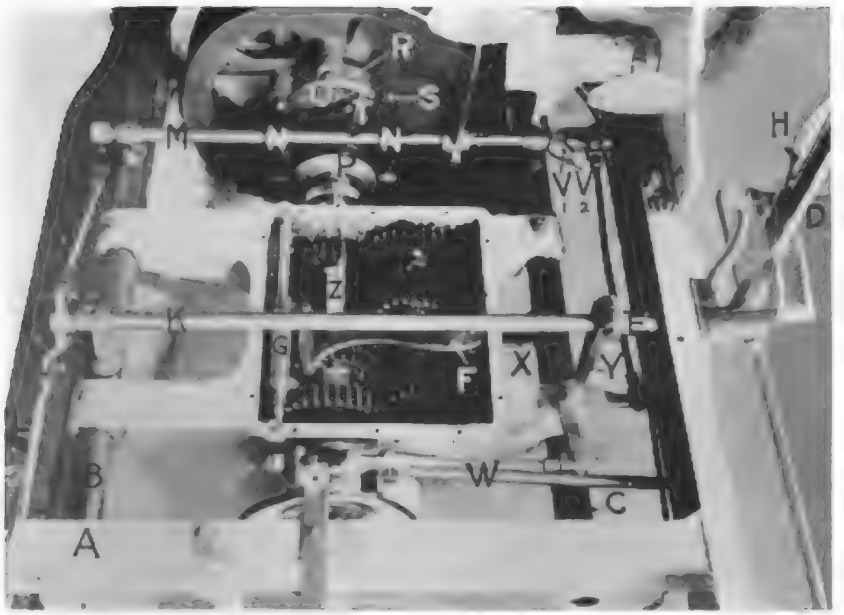
The start was made promptly at 8 o'clock, the first car away being a 45-horsepower Pope-Toledo, with Royce Hough at the wheel, and having as passengers a number of newspaper men, including the MOTOR AGE correspondent. This was the pilot car and to it was left the duty of laying the course to Frederick. Starting from the Pope garage on Fourteenth street, the pilot car, with a jolly party aboard, wended its way briskly through the city and was soon on the Brightwood road. There was an entire absence of dust, a light rainfall the night before having put the road in fine condition. The first stop was made at the dividing line between Maryland and the District of Columbia, where toll was demanded and paid. The crisp air with just a suggestion of approaching fall, made riding very pleasant and the fine condition of the road enabled Hough to hit it up in great shape. Again at Olney, 20 miles out of Washington, another toll gate was encountered, and the party had to dig for more coin. It was a pleasure to pay toll on the road as far as Ridgeville, for it is kept in excellent shape and there was no thank-you-mams to bump one out of the car. Passing Ridgeville, a pretty little village resting on a hillside, the hilly country was encountered. From there to Frederick it was a succession of hills, which would not have been so bad were it not for the fact that every hundred feet or so there was a ridge in the road. These ridges might make good resting places for tired country horses when hauling heavy loads of hay, but they are extremely uncomfortable from an automobilist's point of view. The scenery in this part of the country is magnificent and just at that season of the year it was doubly so. On all sides were evidences of the great crop harvested this year in the great state of Maryland. The people all along the road are very friendly to automobilists and every passing car gets a wave of the hand. Newmarket, with its quiet country manners, turned out en masse to welcome the Washington motorists. From Newmarket it was a short run into Frederick, where the county fair was in progress, and where the motorists in their peculiar clothing were the observed of all observers. When the sights of the fair had become wearisome a short run about the city was taken and then the homeward trip began, Washington being reached just after dark. The round trip, a distance of 106 miles, was made by every car without a single tire or mechanical trouble and did more than anything else to show the advantages of a club.

MOTORPHOBIA ABROAD

Frank Fries, of San Francisco, has just returned from a 6 months' sojourn on the continent and is enthusiastic over automobiling as he found it across the Atlantic. "Motoring abroad is vastly different from motoring in our country, as the roads are of the best quality, especially in France, and a person can speed along at a good clip without fear of hitting a chuck-hole or meeting any foreign obstacle in one's path," he says. "The French are absolutely motor crazy and the drivers of the most reckless type. In Paris the speed limit is never observed and one can see car after car winding its way at break-neck speed through the slower-moving vehicles without fear of the gendarmes or any other police official. Germany is newer at the game than France and hence there is more ill-feeling towards the motorists. Once, while touring from Schwalbach to Frankfort, we received the contents of a bucket of sand in our faces because an machine ahead of us had incidentally run over a dog which had rushed at the front wheels with such speed that it was unable to stop in time. Many such incidents of the hatred of the country folk in Germany for automobiles could be cited. The roads in Germany, although very good, cannot compare with those of France, which I consider perfect. The feeling against motor cars in Switzerland is even much stronger than in Germany. On account of the many ways in which the street arabs annoy the automobilists, such as by putting tacks and glass on the road, it has led the motorists to get up a petition to boycott this small but prosperous republic. In Great Britain I found motoring is not encouraged. The speed limit on the high-roads has been fixed at 20 miles an hour over the highways of the kingdom.



Digitized by Google



Speed Change Gear, Clutch and Operating Mediums on the New Premier

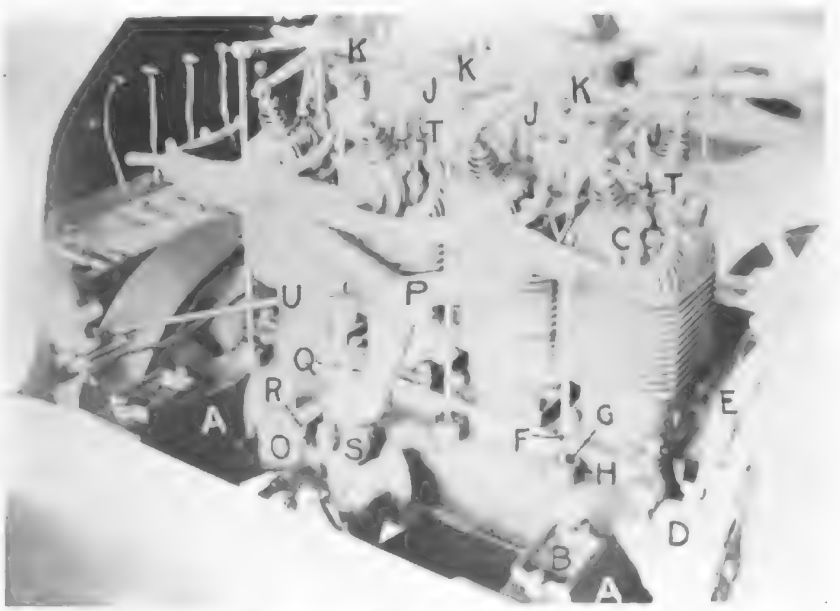
piece M, made rounded at its lower end, where it rests on the round valve stem, the result being almost the same as if a roller was used. The piece M can be adjusted by a screwdriver. The heavy valve spring is retained by a washer N, cotter-pinned in place, and rests in a large circular seating I in the valve cage. The valve stem and head are made separate, the head being held between a collar on the stem and the riveted end of the stem. The valve cage is made with a sleeve almost as long as the valve stem and instead of pivoting the walking beam on a short arm above the cylinder head, a rod extends over the four cylinders and sleeves K separate the walking beams. For supports there are the four vertical pieces J held to the cylinder heads through the unions T.

The carbureter of Premier design has a separate float chamber O and a cylindrical mixing chamber S, within the latter being a vertical sliding drum throttle, the top of the drum being fastened to the rod Q, so that the drum can be raised or lowered from the steering wheel through the connecting rod U. In the drum are two sets of slots, one for regulating the flow of mixture through the piping P to the intake valves, the other acting as a bypass, so that air can pass into the mixture, without passing the spray nozzle. On slow speeds the bypass is not used, the air entering the mixture passing the spray nozzle. The flow of gasoline through the nozzle can be altered by the hand wheel R, a turn to the right or left varying the supply. Hot air is taken in through a screened pipe adjacent to the crankcase. The carbureter is carried on a bracket dropped from the crankcase. The attachment of the intake piping P and the exhaust piping Z is by a pair of cross rods V, an end threading into the intake pipes between the first and second and another between the third and fourth cylinders, the opposite ends passing through the exhaust pipe Z at Y and being held in place by nuts W. The tightening of the nuts tightens the union with the valves. In removing a valve cage it is first necessary to loosen these nuts, so that after the valve cage nuts and walking beam are removed the cage can be lifted out.

Ignition is by jump spark, with battery current. The plugs are placed at an angle in the center of the heads between the valve cages, the high tension wires being carried in supports on the right side. Snap connections are used. On the exhaust side of the motor is the commutator, located on a short vertical shaft and driven by the camshaft. For oiling the motor a four-feed McCord oiler is used, with sight feeds, carried on the dash and the oiler beneath the bonnet. The oiler is driven by belt from the left camshaft. The four leads go to the cylinder walls, where they supply the splash and care for the crank and wrist pin bearings as well as for the five bearings on the crankshaft. This shaft is a forging, with babbitted bearings. Each piston carries four compression rings and an oil groove, and has the piston pins secured to the journals. Bronze bushings are used for the pins.

The method of transmission from the motor to the rear axle is told in the illustration showing the clutch, gear box and front part of the propeller shaft. The flywheel is made with fan blade spokes to draw hot gases from around the motor and carries on its hub five brass disks R, held in place by six studs S, attached to the flywheel spokes. Alternating with these disks are six others of wavy unfinished steel. Carried on the clutch shaft are four large fan-shaped keys holding them rigidly with the shaft. One of the latter disks is shown at O. Each is round and without peripheral lugs like the flywheel disks. Connecting the clutch shaft with the gear box is the jaw-type coupling I, for taking up differences in alignment. In engaging the clutch the hollow cone P, containing within it the clutch spring, is forced forward by the spring, so that it separates the rear ends of the three short levers T, the opposite ends pressing against the disk O, thus locking the eleven disks together. In disengaging the inner pedal, pressed forward, carries the two drop arms N backward and these, carrying at their lower ends bronze shoes working within the collar on the cone P, withdraw the cone against the pressure of the spring, permitting the levers T to relieve the pressure from the disks. The levers T are carried on a separate collar on the clutch shaft.

The sliding gear set gives three forward speeds and a reverse, the drive on high speed being direct. The gear set shown in the illustration is of standard type, but the maker is pushing through a special Premier design giving three speeds ahead. Within the aluminum case—with the entire top a removable inspection plate—the main shaft Z is squared and carries the sliding unit,



Inlet Side of the New Premier Model L Motor

Digitized by Google

PREMIER REAR AXLE CONSTRUCTION, DIFFERENTIAL INSPECTION CAP REMOVED

composed of a pair of gears bolted to a sleeve. The support of the case is novel in that it is carried by four integral arms which rest on the tubings B and C which at their front ends enter the back arms of the crankcase supports and at their rear ends are carried on the double channel cross piece A, being babbitted in the eyeholes in the latter but clamped in split eyeholes in the motor arms. The gear case arms rest on the tubular members and are bolted thereto. Both bearings in the main and countershafts are of the Hess-Bright type and are carried in cages in the gear box ends, the case not being split in line with the cages. For shifting gears the side lever D, the lower part of which is shown, moves from the back of the quadrant to the front in going from reverse to neutral and then through the forward speeds, ending with direct drive. The lever is attached to the short sleeve E, having a bearing on the brake rod K. Depending from it is the arm Y, which has double ball joint connections, with a cross arm X, which attaches to a vertical hub passing through the gear box and connected with the arm F, which in turn has a link connection with the bronze sleeve G on the sliding rod in the top of the gear case. The sliding unit is shown in neutral position. The back gear on the countershaft and the reverse idler cannot be seen. For slow speed the large gear on the sliding unit meshes with the small gear on the countershaft; for second speed the small sliding gear meshes with the second forward gear on the countershaft; for direct drive dental clutch teeth on the front side of the small sliding gear are interlocked with similar teeth on the rear side of the small gear on the end of the clutch shaft, shown at the front end of the case. Not the least interesting feature is the interlocking system, providing that with the application of the emergency brakes the clutch is withdrawn and with the use of the regular brake on the propeller shaft back of the gear box the clutch may or may not be withdrawn, according to the wishes of the operator. The interlocking scheme with the emergency brake lever H is through the rod K, which carries the brake lever, having on its left end a short two-arm lever, the top arm connecting through the rod J with the clutch rod and the other through the rod L with the expanding emergency brakes within the rear hubs. Pulling the lever H back draws the rod L forward, applies the brakes and simultaneously draws the rod J back, disengaging the clutch. The regular brake, a friction band, is carried from the side of the frame through the rod W and is applied by the outer pedal, which works on a sleeve on the clutch rod M and connects with the brake band. On the pedal sleeve is a short lug V2 and attached to the clutch rod M is another lug V1, so placed that when the clutch pedal is pushed ahead lug V2 presses against V1, thus rotating the rod M and carrying the arms N to the rear and disengaging the clutch. When desired the lug V1 can be removed, being pinned in position, the brake losing its interlocking feature.

In protecting the motor, as well as the multiple disk clutch, from mud splashed by the road wheels, a combination metal apron scheme is used. The bottom of the crankcase is practically a bare aluminum surface, requiring no protection, and to prevent mud reaching the top or side of the motor metal sheets are placed between the motor arms, thus forming an apron, but not hung so low as to act as a dust producer on dry roads, yet fully protecting the motor. Projecting backwards from the motor is a short semi-circular pan enclosing the lower half of the flywheel and the multiple disk clutch and extending partly beneath the gear box. The gear set being reached through a large inspection plate in the top of the case, it is not necessary to suspend an apron beneath the entire case. This system of aproning, while small and scarcely visible from the side of the machine, is sufficient for all conditions.

Alignment of the multiple disk clutch, crankshaft and gear box is gained by first mounting the motor on the frame and then inserting the tubular frame pieces B and C carrying the clutch and gear box in the crosspiece A of the main frame. The tubular pieces at first fit freely in the eyeholes in this crosspiece, but after the gear box ends have been bored to carry the cages for the main and countershafts and these are mounted in alignment with the crankshaft, the tubular pieces B and C are babbitted into the piece A, so that both shafts of the gear box are aligned with the crank and clutch shafts.

The hollow metal dash, made extra deep and with the sides extending well to the back, thus forming sides for the front part of the foot board, acts as a cross support for the main frame. Within it are carried the coil on the right and the mechanical oiler at the left. On the next lot of machines the oiler will be removed to the side of the motor, close to the exhaust piping, and only four small sight feeds will be carried on the dash.

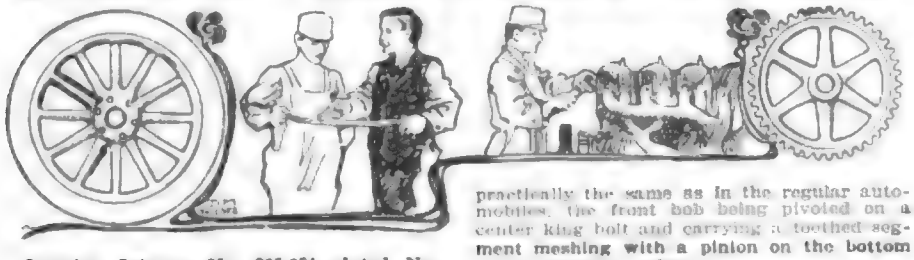
The steering gear of the worm and sector type is enclosed in an aluminum housing, carried partly on the side piece of the main frame and partly on the tubular piece for carrying the gear box, being bolted direct to the former and resting on a bracket bolted to the latter. The sector axle passes through the right side piece of the frame, where it carries a long drop arm, with ball and socket connections with the shaft connecting with the right steering knuckle. The tie rod between the knuckles passes in front of the axle. The steering column is standard throughout, being of the tubular type with sleeve and rod for the throttle and spark levers and the usual bearings within it. Steering knuckles are of the Lemoine type, carried in the usual manner on the axle ends. Double races of ball bearings carry the front road wheels.

In lubricating all parts of the machine except the motor, separate oilers are used. Within the gear box is an oil bath, and the same method is adopted within the differential housing, and in the steering gear case.

PREMIER MODEL L, WITH SIDE ENTRANCE AND HOLLOW DASH

Digitized by Google

Current Automobile Patents



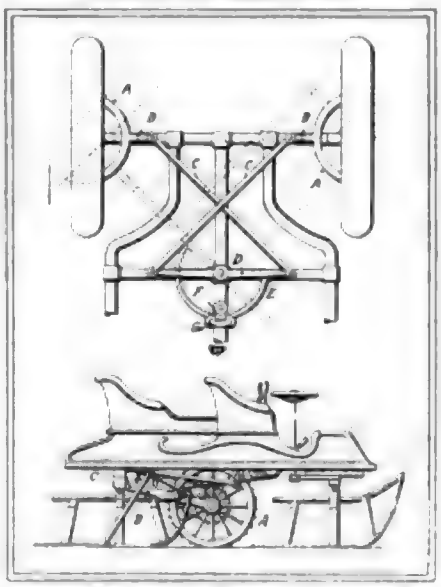
Steering Scheme—No. 805,274, dated November 21; to John W. Eisenhuth, Brooklyn, N. Y.—In his steering gear the inventor attaches to each front road wheel a semi-circular yoke A, to the center of which is the arm B. The yokes are connected to the bottom of the steering column, which carries the small pinion F, by having this pinion mesh within a segmental rack E, made rigid with the lever D, which is pivoted at its center to the vehicle frame. The right and left ends of this lever are connected by the cross rods C with the opposite arms B on the steering yokes. Back thrust caused by the pinion F on the segment E is overcome by the revolving bushings G pivoted on yokes on the main frame and bearing directly on the segment. When turning to the right, the movement of all the steering parts is as shown by the dotted lines.

Clutch Gear Set—No. 804,999, dated November 21; to William E. Blair, Buffalo, N. Y.—The invention relates to an individual clutch gear set in which the main shaft A and the counter shaft B have corresponding speed gears C, D, E, F, each set continually in mesh with those of the other and both sets loosely mounted on their respective shafts. The expanding of the clutches locking the different gears with their shafts requires the use of rods H and K, respectively located within the hollow shafts B and A. On each rod are four conical-shaped collars intended to bear against the pieces T within each gear and which work expanding portions, locking the gears to the shafts. By the exact location of the collars on each shaft it can be noted that moving the shaft H to the front and the shaft E to the rear through the medium of the pinion M and the shifting rod L, the respective gears, F-F, E-E, D-D and C-C, can be meshed in the above order. Connections with the shifting rod L with the change speed lever are made at N.

Motor Sleigh—No. 805,318, dated November 21; to Alanson K. Ramsdell, Old Orchard, Me.—The automobile sleigh referred to is propelled by a large driving wheel A with toothed tire. The wheel is carried on a pivoted arm B, above which is a short spring constantly pressing the rack downwards to hold the driving wheel to the ground. Drive from the motor is through the sprocket C connected by chain with the large sprocket on the drive wheel A and sprocket C, in turn connected with the crank shaft of a small motor carried beneath either the rear or the front seat. Steering and changing speeds are practically the same as in the regular automobiles, the front bob being pivoted on a center king bolt and carrying a toothed segment meshing with a pinion on the bottom of the steering column.

Three-Part Tire—No. 804,891, dated November 21; to Arthur J. Slade, New York, N. Y.—The inventor's tire consists of three elliptical bands of fabric and rubber placed side by side on the wheel rim and held in position by retaining flanges and a cross bolt passing through them. Each band is originally made circular in cross sections and formed by alternate layers of rubber and fabric, each layer being vulcanized or cemented to the adjacent ones. The entire band, after completion, is pressed into elliptical shape and placed on the rim so that the long diameter of the ellipse is in a radial direction.

EISENHUTH STEERING GEAR



RAMSDELL'S MOTOR SLEIGH

Goodyear Tire—No. 804,806, dated November 21; to Will C. State, Akron, O.—In the pneumatic tire referred to the wheel rim is made with an inverted clincher lip F at one side and a U-shaped seating A at the other, in which is sprung the split ring piece B for holding the tire in position. To assist in retaining the tire on the wheel, the valve stem D carries within the tire the wedging part C, which bears against the inside of the tire lips. On the lower end of the valve stem is the thumb nut E, so devised that by it the part C can be drawn towards the rim, thereby wedging the tire lips between the respective lips F and B. In this way the tire is securely held in position, whether inflated or not.

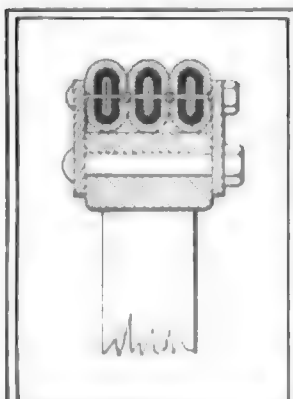
Tire Thread—No. 804,892, dated November 21; to James M. Small, Piqua, O.—This protective tread for pneumatic tires consists of a strip of material for covering the tire tread and has tongue pieces on either side for fastening the tread in position. On each tongue piece is a metal plate, the plate terminating in a hook which lies in the recess between the rim and the tire on each side of the latter. Engaging the hooks are metal rings with turnbuckles. In attaching the protector, the rings are made as large as possible until the hooks are in position, when, by means of the turnbuckle, they are tightened until the tread is held firmly in position.

Gear Shifting Levers—No. 804,971, dated November 21; to James W. Packard and William A. Hatcher, Warren, O.—The shifting lever for giving the forward and reverse speeds has pivoted on either side of it an arm with lateral projecting lug, by means of which the lever can be engaged in one arm for giving the reverse speed and with the other for giving forward speeds, there being on the lever arrangements for it, connected with the lugs on the arms. A spring is provided to normally hold the lever in engagement with the forward arm and a guide is provided to hold it in engagement with the backing arm when this arm is moved from its normal position.

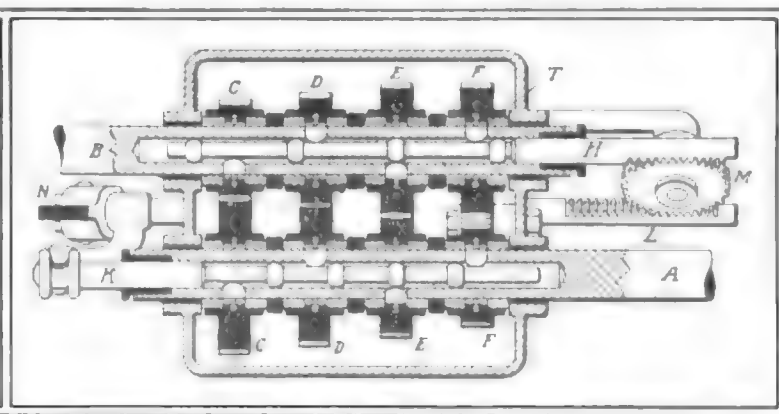
Steering Wheel—No. 804,955, dated November 21; to John W. Johnson, Kokomo, Ind.—The steering wheel is made with a pitted rim, which is enveloped in a hard rubber cover which is permanently vulcanized upon the rim and anchored in position by the pits. The four spokes of the wheel enter the rim part through openings in the rubber covering.

Steering Frames—No. 804,946, dated November 21; to William Hanna, Cincinnati, O.—The steering device referred to is one intended for a four-wheel drive automobile, in which the drive shafts in each axle are driven by propeller shafts and bevel gears with universal couplings between the wheel spindles and the axle shafts. For steering purposes each wheel spindle is carried on a rectangular framework, the four pieces being pivoted at the corners and the two side pieces having a yoke to which is attached the wheel spindles. A steering gear is connected up so as to turn the wheels—the front ones to the right and the rear ones to the left or vice versa.

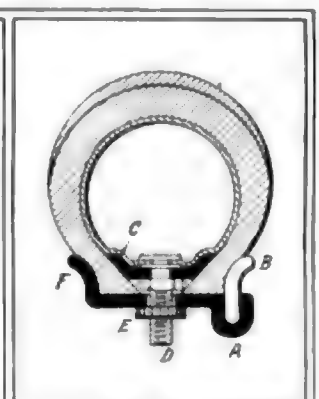
Differential Housing—No. 803,121, dated October 31; to Frederick C. Miller, of Cincinnati, O.—The invention is a rear axle for shaft-driven automobiles and consists of a tubing, the intermediate walls of which are swaged apart from the center of the tube, forming a housing. A wheel shaft projects through the tube into the housing and there is a transmission mechanism within the housing. The aim of the design is to have a differential housing without the use of a separate housing which would have to be secured to the ends of the tubing containing the driving shafts in the axle.



GOODYEAR TIRE



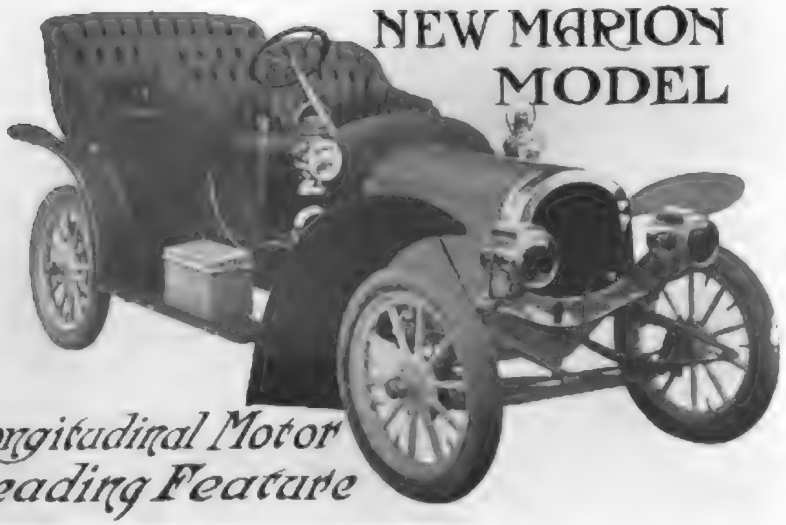
INDIVIDUAL CLUTCH GEAR SET OF WILLIAM E. BLAIR



SLADES' TIR

Digitized by Google

NEW MARION MODEL



Longitudinal Motor Leading Feature

THE Marion Motor Car Co., of Indianapolis, Ind., has just brought out its 1906 car, to be known as model 5. It is an air-cooled four-cylinder 24-28 horsepower touring car accommodating five passengers. The 1906 machine is radically different from anything heretofore introduced by the company, having a motor placed lengthwise. Not less noteworthy as far as the Marion is concerned is the assembly of the multiple disk clutch, speed change gear and differential. All are confined in one case, forming a compact arrangement. One of the points in the makeup of the car is the new brake system, both foot and hand brakes being contained in the large drums placed on the rear wheels, and fastened by six bolts, which pass through alternate spokes. The road wheels are of artillery pattern, ball bearings being used in all. Plain bronze bearings are used throughout the motor with Hess-Bright ball bearings for the fan.

The main frame is made from cold rolled steel and is 124 inches in length and 32 inches wide. The side pieces are parallel throughout and are braced by three cross members, each reinforced by gusset plates. The motor is supported by four arms fastened to the frame direct, the transmission case gaining its support from the middle cross member in front and held in position in the rear by the jackshaft, which is supported on ball bearings on either side, attached to the under side of the main frame.

The spring suspension is of the accepted style, full elliptical 36-inch springs being used in front and 38-inch semi-elliptical springs for the rear. The front axle is made from steel tubing ¼-inch thick and of 2-inch diameter, being slightly dropped from the knuckles to the spring seats, but being straight between the seats.

Many changes are made in the 1906 motor, the exhaust valves being placed in domes at the top of the cylinders, serving as receiving chambers for the exhaust gases. The new pull rod, and extension arm acting on the exhaust valve spring cap, is actuated by a roller under the exhaust valve cam. The commutator is driven by a horizontal bevel gear shaft from the camshaft, the commutator shaft extending through the left side of the engine case adjacent to the second cylinder. The cylinders cast separately, with circular radiating flanges, outside of which are the cylinder stud bolts. The exhaust valve dome takes the place of flanges usual on air-cooled cylinder heads. The motor has 4½-inch bore and 4½-inch stroke.

Aluminum is used throughout the crankcase, which is a two-part casting. The top part with integral webs for supporting the crankshaft bearings and the bottom part forming a reservoir for engine lubrication, is divided into four oblong compartments, no inspection plates being used. The case is arranged on the right with cup-like places, with covers, to permit pouring in enough oil for from 200 to 225 miles of running. No other lubrication is used.

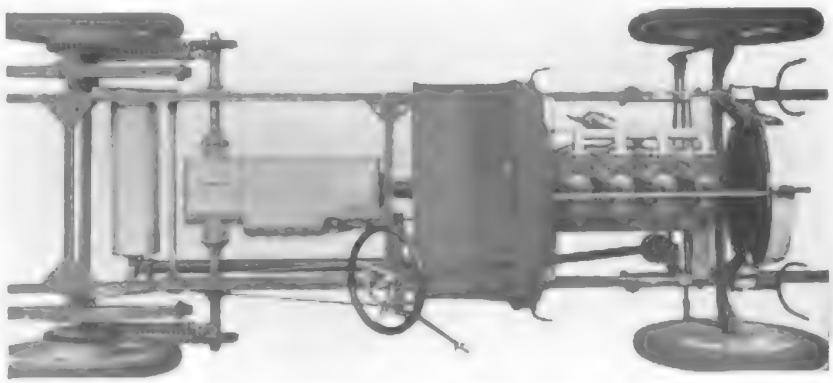
The housing for the camshaft gears, placed at the front end, is integal with the case proper, so that the gears work in an oil bath in a dust tight case. The pistons carry three compression rings above the wrist pin and one below. The rings, as well as the piston, are ground to equal weight. Each ring is pinned against rotation. The wrist pin of hardened 1¼-inch steel, is hollow and is pinned to one of the journals in the piston. The crankshaft is made from forged 30 point carbon steel, 1¾ inches in diameter and runs on five bearings. The bearings, 2½ inches long and of plain bronze, are oiled from the splash. Each bearing receives its support through four bolts passing through cross braces in the upper half of the case, thereby relieving the lower half from strain. On the rear end of the shaft is an integral flange, to which the 19-inch flywheel, of the six-spoke fan type, is bolted.

In the valve disposition the intakes are removed by unscrewing a cap on the port head, which also contains a priming cock. The exhaust valve is 2 inches in diameter and the intake 1½ inches, the former being placed in the large receiving dome.

Ignation is by jump spark, with 6-volt 40-ampere storage battery, the spark being controlled from the wheel by a thumb lever, as is also the throttle, working in a notched semicircle. Steering is by a Brown-Lipe irreversible gear placed well forward under the hood.

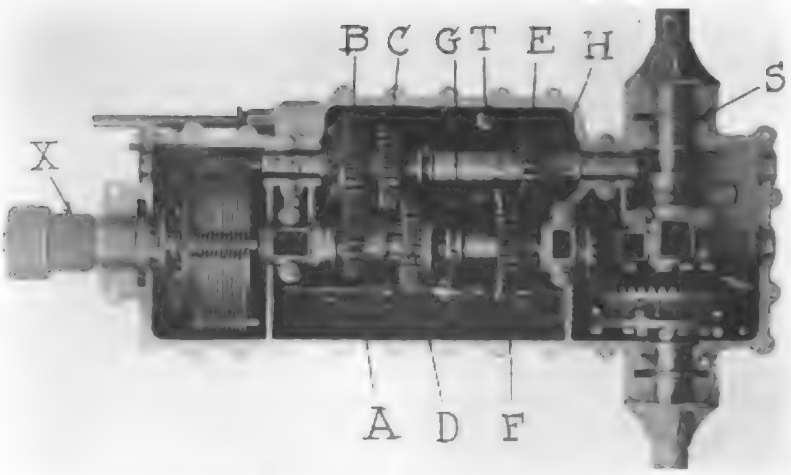
The multiple disk clutch consists of alternate steel and bronz disks, nine of each being used, one set being attached to the shaft coupling with the crankshaft and the other secured to the main shaft in the gear case. The clutch is actuated by a bronze yoke running in a bath of oil. A spring contained in the sleeve at X holds the clutch in engagement and end thrust is cared for by ball thrust bearings between the sleeve and clutch spider. A universal joint between the flywheel and transmission case provides alignment.

The present type of gear case in which changes of speed are made by three separate shafts, may be considered a combination, having involved both the straight sliding and selective types, being selective from the intermediate speed to high and sliding from the neutral to reverse, the neutral notch on the shifting rod being placed between the low and intermediate speeds. The transmission with its four sliding units is so constructed as to slide two members toward each other simultaneously, thus lessening the distance traveled by each by practically half. For example, in obtaining slow speed ahead one sliding unit on the main shaft is moved back and at the same time another sliding member on the secondary shaft is moved ahead, meeting midway a gear on one meshing with a corresponding one on the other. The illustration of the transmission shows the gears in the



Top View of the 1906 Marion Car

Digitized by Google



CLUTCH, SPEED CHANGE GEAR AND DIFFERENTIAL OF THE MARION

eutral position. When driving in all peeds other than the high, the gears and B which transmit power to ie secondary shaft are always in ngagement. To obtain low speed ie gears E and F engage, each traveling qual distance. The power is then being ansmitted from the gear A to B and E F. On the intermediate speed the gears and D engage, traveling equal distance. he power is then transmitted A to B and om C to D. When the high gear is ob-ined the pinion A disengages with the ar B and locks with the internal gear , which travels forward to receive it. his leaves the secondary shaft idle and cks the primary shaft, so that the only ars in mesh are the bevels, which trans-it the power to the jackshaft. When the verse is obtained the gear F slides back d engages the gear H, which is perma-ntly fastened to the reverse gear shaft. ie gears E and G travel toward each her and engage at the same time. The wer is then transmitted from A to B, to G and H to F, this reduction being eater than in any of the other speeds. ith this construction complete speed anges are obtained by a travel of 3 9-16 hes of the gear shifting rod. The secondary shaft does not revolve while driving on high gear and the reverse gears are in action only when the car is being driven backward. By this arrangement of the sliding members it also makes the gear case more compact than would otherwise be possible.

Three ring oilers are used, one of which is shown in the accompanying illustration at S on the jackshaft, the other bearings throughout the transmission case excepting two thrust bearings in aluminum housing of the differential being of the plain bronze type, with square openings at the top of each bearing and covered by wire screens, which act as filters for the oil. The gears are of machine stock with six pitch. The interlocking notches on the shifting rod may be seen in the illustration. The top of the nut T is hollow and contains a spring and finger, which, while engaged in a notch, holds the gears in their respective positions, no quadrant being used at the shifting lever.

A controvertible side entrance body, so the car may be used as a runabout or for touring purposes, is fitted. Wood is used in the body construction, the only metal contained therein being the aluminum hollow dash, which encloses the coil. The upholstering is in black leather, tufted. Wide fenders of the detachable style are used, which are readily removable. The housing over the sprockets of the double chain final drive, as well as the battery box, are of metal. A tool box hung below the back end of the car gives room for tool carrying purposes. The bonnet has a rounded top, with three hinges, one on top and one on each side.

MOTOR CAR LITERATURE

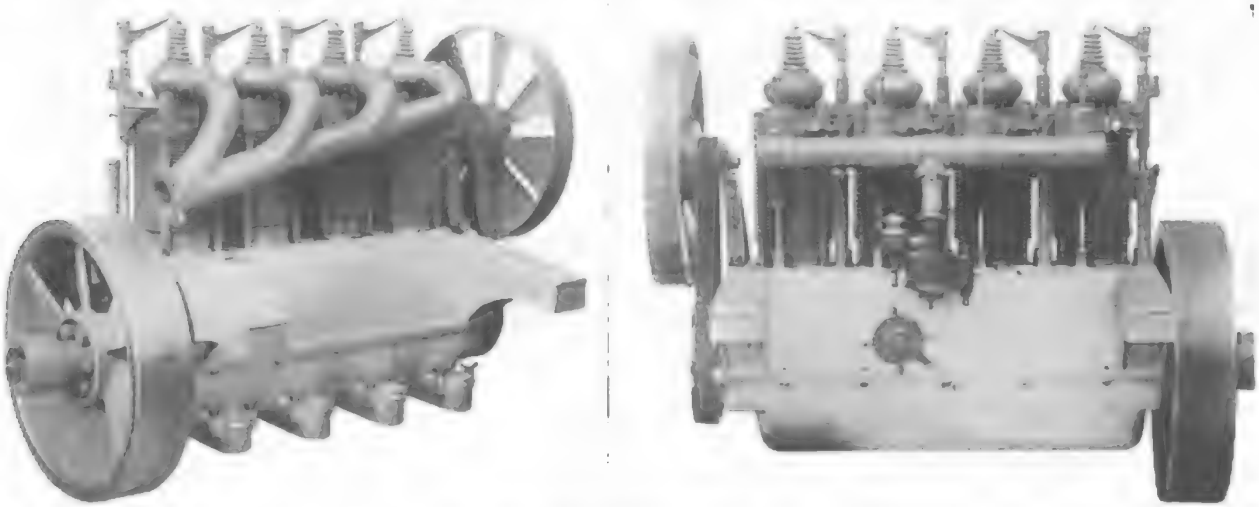
Saks & Co., of New York, have issued a 200-page flexible-covered descriptive catalogue of the latest things in automobile clothing, for both men and women. Naturally most of the space is devoted to fur and other winter clothing, but a considerable portion is taken up with storm goods. The illustrations are from photographs taken from life and are well printed from half-tone cuts. Every conceivable kind of fur is now used in the manufacture of automobile apparel.

The Edmunds & Jones Mfg. Co., of Detroit, Mich., has issued a catalogue for its 1906 line of automobile lamps, both oil and gas. Including the searchlight, there are ten different models shown.

A new catalogue of rules, micrometers, and other measuring devices, has been issued by the Brown & Sharpe Mfg. Co., of Providence, R. I. The book, besides being a catalogue and price list, contains many valuable tables.

The neatest product in lamp literature that has appeared for some time is a new catalogue published by John H. Graham & Co., selling agents for the C. T. Ham Mfg. Co., of Rochester, N. Y. The book is shaped like a motorcar head light with the front cover showing the point of the lamp with light burning and the back cover giving a rear view of the lamp. The coloring is in black and bronze on a white ground. About twenty pages are given over to large illustrations of the lamps and information and prices on them. All sizes and styles are quoted.

The latest White bulletin, the house organ of the White Sewing Machine Co., of Cleveland, O., contains a series of tour stories, made in White steamers. Each tour is profusely illustrated.



HAUST SIDE

THE 1906 FOUR-CYLINDER MARION MOTOR

INLET SIDE

Digitized by Google

FROM THE FOUR WINDS

Nutmeg State's Strength—According to the latest statistics, Connecticut had 2,292 automobiles licensed in the state on November 14.

To Tax in Germany—The kaiser needs the money, so the German government is digging up ways of replenishing the imperial coffers. As a result, it is proposed to put a tax of from $25 to $37.50 a year upon pleasure automobiles.

Tracy Going Abroad—For the second time this year Joe Tracy, who finished third in the Vanderbilt race, is going abroad. He expects to sail this week and after taking in the Paris salon he will go to England to study the railway motor car, for Tracy was an engineer originally and much of his success as a driver is due to his mechanical ability learned years ago.

Helps the Monks—Monks whose hospice is at the top of Mount Saint-Bernard, France, have solved a transportation problem. The roads being so bad that ordinary vehicles have trouble getting to the top, the automobile was called on when the monks laid in their winter supplies, the 16-horsepower car easily making the ascent and saving the fathers quite a bit in cartage.

Seattle Selections—More than seventy members are now enrolled on the books of the Automobile Club of Seattle, of Seattle, Wash. The annual election resulted in the choice of Alfred Battle as president, N. H. Latimer vice-president, F. R. Seymour secretary and treasurer and A. S. Kerry and Walter S. Foster as two of the five directors. The club has purchased 1,000 signboards which will be posted in the surrounding country for the guidance of motorists.

Long Motor Cycle Trip—One of the longest continuous trips ever taken on a motor cycle will be made by Paul Stamsen and Harry Lowes, of Muskegon, Mich., this winter, when they will undertake to make the trip to San Francisco, Cal., in 35 days, their object being to demonstrate the durability of the motor cycle for long distance trips. The route will be from Muskegon to Chicago, then through Missouri, Kansas, Colorado, New Mexico, Arizona and California to their destination.

Really Roughing It—An automobile party from Joplin, Mo., consisting of Mr. and Mrs. Arthur Bendelari, Mr. and Mrs. Spencer K. Ortt, Miss Clara Paige and Nat Paige, recently had a thrilling experience on a trip to Kansas City and return. To start with the roads were poor, then the tourists ran out of gasoline and had a time getting more; they broke part of their steering gear on the return trip and had to do some amateur blacksmithing, and to cap the climax they encountered a washout so that they were forced to pass the night on the road. They stopped at a farm house, but there wasn't room for them, so they borrowed blankets from the farmer and slept in a haystack the rest of the night.

LOADING AUTOMOBILES ON STEAMSHIPS

Another Bennett Cup—James Gordon Bennett, donor of the international automobile trophy, has hung up another cup, this time the Aero Club of France being favored. The mug will be for a distance trial for spherical balloons, to take place at Berlin next May.

New Kind of Record—Some person with plenty of time on his hands counted the automobiles that passed over Washington bridge at Bridgeport, Conn., on the way to New Haven to take in the Yale-Princeton football game and found that 879 cars went by that one point. He figured that placed end to end they would reach 2 miles and that the aggregate cost would run close to $4,000,000.

Compiles Good Roads Dope—Sam Huston, Ohio's highway commissioner, has compiled a pamphlet showing the remarkable growth of the interest in New Jersey, Massachusetts, California, New York, Maryland, North Carolina, Maine, Rhode Island, New Hampshire, Pennsylvania, Michigan, Iowa, Utah and Colorado in the matter of road investigation and the principle that the state should aid localities in the improvement of the leading highways, the states being ranked according to the strength of the movement.

Phantom Motorist—Pittsburg has a phantom automobile. It flits about the east end at breakneck speed and hovers around Homewood cemetery and the dark boulevards of Schenley park. The officious policemen in the park are telling strange tales of the muffled woman in a white touring car that goes racing through the Bigelow monument every dark night and sends her machine half over the cliffs in the park. Last week negro chauffeurs were terrified by the ghost and their comrades are now carrying rabbits' feet to ward off impending danger. So general have the stories of the phantom automobile become that a midnight automobile party is to be held to hunt down the strange apparition.

Come Up Fast—Out of a total of $250,000 members of the Automobile Club of America have subscribed for $211,000 worth of second mortgage bonds on the new club building on West Fifty-fourth street, New York.

Warns Scorchers—Glencoe, Chicago's suburb made famous by its recent attack of motorphobia, has gone about the suppression of scorching in a different way than bumping the bumps and arresting offenders on sight. Now large steel signs, "Warning. Run slow," are posted along the Sheridan and Green Bay roads and the authorities are hoping they will have some effect.

Fool Drivers—New Haven, Conn., motorists are looking for jokers who are scaring them by means of a dummy figure. They operate on Orange street, where the asphalt begins and they work at night. The unknowns hide along the street, a stout rope being tied to the dummy. As the automobile approaches this figure is yanked across the street in front of the car, at the expense of the driver's nerves. Then the conspirators hot-foot down a convenient alley and make their escape.

Fast Kilometer—After a delay of several days on account of the heaviness of the roads, due to recent rains, Frederic Dufaux, November 13, beat the French flying kilometer record by 2 seconds, making the distance in 23 seconds flat, at Salon, France. The course was soft at that and uphill on the Crau road in the direction of Arles. Baras holds the world's record of 21 seconds, made at Ostend.

Oldfield's Latest—Barney Oldfield is perfecting plans to reproduce on the stage an automobile race by means of automobiles in action and moving pictures. He has been at work for some time testing alcohol instead of gasoline and he claims that in all probability he will use alcohol in his racing cars on the track. In the stage act the cars are in a neck and neck race with moving pictures showing the scenes on all sides as the race progresses. The opening will be in Newark.

Turkey Trip Made—R. L. Jefferson has been reported safe in Constantinople, which gives him the honor of being the first motorist to cross Europe to the Turkish metropolis. The Englishman went from London to Constantinople in 31 driving days for the 2,509 miles. The Turkish government insisted upon giving him a military escort through the province of Adrianople, which caused some delay, Jefferson having to accommodate the pace of the car to the speed of the horses. The Rover car stood the journey well and his Dunlop tires kept their original covers throughout the trip, only one inner tube having to be changed. The tires on the

Digitized by Google

front wheels were not touched, making the journey on one inflation.

New Jersey's Record—Since 1892, when the state aid law was first passed, New Jersey has spent $5,745,515.28 on 1,043.529 miles of good roads, the cost ranging from $1,554 per mile for a gravel road to $25,500 per mile and averaging $5,505 per mile. The cheapest macadam road cost $4,282 per mile.

Ball Player a Chauffeur—Sammy Strang whose claim to fame is that he is a member of the New York National League team which won the world's baseball championship, is now driving a car for a Philadelphian, with the idea of going south this winter, it is reported, and taking part in the Ormond beach meet.

Cops Go Some—New York policemen who ride motor cycles competed for the championship of the police department last Saturday over a course running from Caton avenue over the Ocean speedway to the Concourse at Coney Island, a distance of 10 miles. Benjamin Mallon, on Commissioner McAdoo's staff, won in 14 minutes 4-5 second, next, and Charles M. Murphy, once a famous cycle racer, who rode a mile back of locomotive pace in 54 seconds, third in 15 minutes 31 seconds. Mallon and Murphy have been protested, it being claimed they rode racing machines which were not owned by them.

Chauffeurs Organize—The Detroit Chauffeurs' Association, not a union but a club, has been formed, with twenty-four charter members, the object of the organization being "the betterment of those engaged in the business, mechanical instruction and social relaxation." Charles Ternes is the temporary president and William T. Guenther secretary.

Aprons Unnecessary—A Detroit alderman has asked that all automobilists in that city be required to equip their cars with aprons to prevent oil from dripping on the asphalt pavement, but the Detroit Automobile Club, through President Broadwell, has entered a strong protest with the committee to which the ordinance was referred, claiming that aprons would collect oil and that when going up an incline this oil would be thrown on the pavement in large spots, doing far more damage than the ordinary drip. Besides, he argued, this collection of oil in an apron creates a dangerous condition, making explosions possible.

As They Do It in England—Returning travelers speak with interest of the careful manner automobiles are handled in crossing the English channel. Every precaution is taken to prevent an accident, the cars being put aboard and taken off steamers by means of a huge crane. It costs $20 to get an automobile across the channel in this manner.

Even in Canada—Canadian farmers, no doubt envious because they have to rely on the horse for their transportation, built a fence across a road near Port Hope, Ont. A. O. Geiger, a motorist, smashed into the fence in the dark and had a close call. The editor of a Cobourg newspaper, while sympathizing with the farmers because automobiles scare horses, condemns the action and calls it "a mean trick and a crime."

THE READERS' CLEARING HOUSE

EARLY AMERICAN MAKERS

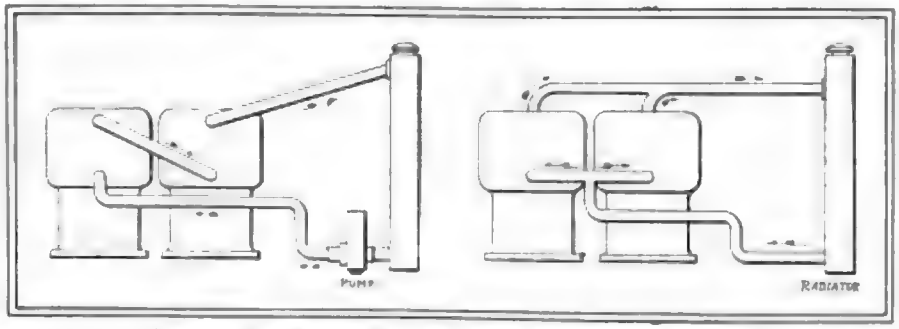
Toledo, O.—Editor MOTOR AGE—Having had a controversy with several of my friends on automobiles, I wish to ask you to inform me as to who invented the first successful automobile, and when; also who manufactured the first gasoline automobile for the market and when, in the United States?—VICTOR CHRISTEN.

This is a disputed point, and of course much depends upon what would be considered a successful automobile. Duryea, Haynes-Apperson, Winton and Olds were the first in the field in this country.

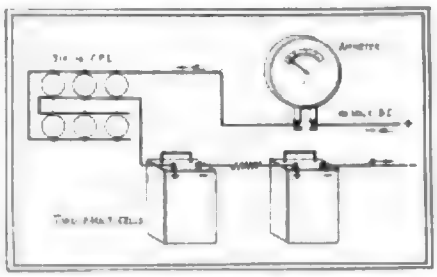
PIPING WATER-COOLED MOTORS

Flint, Mich.—Editor MOTOR AGE—Will you inform me through the Readers' Clearing House if the following method of piping for a four-cylinder water-cooled motor is advisable? The cylinders are cast in pairs and the honeycomb radiator forms the front end of the bonnet. From the base of the radiator the water is drawn by the gear-driven pump to the base of the water jacket, surrounding the rear pair of cylinders. From the jacket it passes from the center of the top of the jacket to the base of the jacket for the front pair of cylinders and finally exits from the top of this pair to the top of the radiator, as shown in the drawing. In this way the back pair of cylinders gets the cold water and the front pair the warmed water from the rear. Would it be an improvement to have the cool water strike the front pair first?—W. P.

For the water circulation it is preferable to have the water in both cylinders as near the same temperature as possible. When the water is distributed to both cylinders evenly, as shown in the second drawing, the cooling is more even. Where the water is introduced to rear cylinders first, the hot water enters the front cylinders at a higher temperature than that of the water in the rear cylinders, which is cooled by the force of the air through the radiator.



INCORRECT AND CORRECT WAY OF PIPING IN THE WATER SYSTEM



WIRING FOR CHARGING BATTERIES

MOTOR DIMENSIONS

Aurora, Ill.—Editor MOTOR AGE—Will you kindly answer the following questions regarding a motor with a bore of 4¼ inches and 4-inch stroke? How thick should the walls of the cylinder be, what length for the connecting rod, what thickness and width of the rim of the flywheel and the diameter?—S. D. C.

For a motor 4¼ by 4 inches the cylinder walls should be about 7-32 inch thick; the connecting rod about 10 inches; flywheel about 3½ inches wide, ¾ inch thick and 16 inches in diameter. These dimensions are approximate only, as there are many things to be taken into consideration, such as speed of motor, strength, etc.

TIRE FILLING

San Diego, Cal.—Editor MOTOR AGE—Can you give directions for making a filling for single tube tires? I have seen samples of a material resembling rubber, which is pumped into the tire in place of air, making a solid tire.—C. W. W.

There are some cases in mind of the mixing of tire filling, the ingredients of which seem as yet in the experimental stage and not generally known to the trade.

CHARGING BATTERIES

Indianapolis, Ind.—Editor MOTOR AGE—Can you give explicit directions in the columns of the Readers' Clearing House on recharging batteries? I operate an electric runabout and have occasion to have it charged in different plants in this and other cities. After charged in some garages I find a greater supply of current than obtained in other places. What I would like is a short rule, so that when having my machine charged I would be certain that it is being done properly and the battery not injured. F. W.

The accompanying diagram illustrates the wiring for charging batteries on any line of 110 volts. With the arrangement of the six 16-candlepower lamps this may be used with or without ammeter. The capacity of the batteries can be determined by testing them with a small volt-meter, 2 volts per cell making a 4-volt battery.

Digitized by Google

Among Makers and Dealers

ADDITION BEING ERECTED BY THE PACKARD MOTOR CAR CO., of DETROIT, MICH.

Elmore-Switch—A. Elliott Ranney & Co., New York agents for the Elmore, have moved their headquarters to 1851 Broadway.

Belgian Show—The date for the opening of the Belgian automobile salon has been definitely set by the committee for January 13, the affair to continue until the 25th of that month.

New Wayne Agents—A. T. Wilson, 1548 Broadway, Denver; Paxson Motor Co., Cleveland, O.; and the Greenville Auto Co., Greenville, S. C., are recent appointments of the Wayne Automobile Co.

Moving to Detroit—The Winkley Co., manufacturer of oil hole covers and oiling devices, which has just acquired the Garlus carbureter and the Eureka separator, has decided to move from Hartford, Conn.

Opens Dayton Place—John S. Johnson, formerly associated with Earl Kiser, has taken the old stand of the Day and Night Auto Co., on Fourth street, Dayton, O., where he is handling the Winton and Autocar.

Is Reorganized—The Standard Automobile Co., of Rochester, N. Y., has been reorganized and will handle the Jackson. A. H. Sowers is secretary and general manager and S. R. Snook, E. H. Lapp, and F. E. McClellan directors.

Vienna Show Dates—Dates for the Vienna show have been selected, 10 days, starting March 18, having been set aside for the exhibition. The affair will again be held in the Gartenbauhalle, although it will be necessary to overflow into adjoining buildings.

New Hub Concern—A new company has been formed to handle the product of the Olds Motor Works in Boston. The new organization is called the Adams-Sutton Motor Co., incorporated with a capital stock of $40,000. The president and manager of the company is Walter O. Adams, formerly general manager of the Crest Mfg. Co., of Cambridge, and later assistant sales manager of the Ford Motor Co., of Detroit. David Sutton is the secretary-treasurer. The company will occupy quarters in the new Motor Mart and will be ready to show the new Oldsmobile cars during the latter part of November.

De Dietrich Garage—The de Dietrich Importing Co., of New York, has leased for 5 years the 25-foot building, 5 West Forty-fourth street, for garage purposes.

In S. & M.'s Old Place—Smith & Mabley's former garage at Seventh avenue and Thirty-eighth stret, New York City, has been leased by L. C. Jandorf, a dealer in second-hand cars.

Big Tire Fire—Seventy-five thousand dollars' damage was done to the plant of the Dunlop Rubber Co., at Birmingham, England, on November 10. Thirty thousand tires were destroyed or damaged.

Medal for Oldsmobile—It is announced that the Lewis and Clark exposition at Portland, Ore., has awarded a gold medal to the Oldsmobile exhibit, which is claimed to have been the only one of the sort decorated.

Cross for Charley—The cross of the Order Merite National de Bulgarie has been conferred by the prince of Bulgaria upon M. Charley, the Mercedes concessionaire for the United States and France. This is the third decoration M. Charley has received, the French government bestowing the others.

Lozier Move—The Lozier Motor Co. has been obliged to quit abruptly its temporary New York salesroom at 22 West Forty-second street, on which it had only a temporary lease. It will occupy other quarters until it can get possession of its new garage at Broadway and Fifty-fifth street early in December.

Frayer-Miller Changes—On the 1906 Frayer-Miller the wheel base has been increased to 100 inches, the hood has been shortened, the wheels and tires are larger and the front axle is of the one-beam variety, with Timken roller bearings. The cam gears, formerly in front of the engine case, are all enclosed and run in oil. There is a four-speed transmission and reverse running on Hess-Bright bearings, as is also the case with the rear axle. The body is larger, there are new brakes working internally and externally on the rear wheels and a new spring suspension is fitted.

Viquecot Locates—The Viquecot company, of New York, has leased the former de Dietrich garage at 215-217 West Forty-eighth street. Louis Caswell is the manager in charge.

After More Mors—Edward Lillie, manager of the Mors Automobile Co., of New York City, sailed for Europe this week to attend the Paris show and arrange for 1906 shipment of Mors cars.

Progressive in Joplin—The Joplin Automobile Co. wishes it distinctly understood that it is very much on the automobile map, its garage at Joplin, Mo., being among the best known in the state.

New Auction Firm—Harlan W. Whipple, Carl Page, Walter C. Allen, Carl H. Page, Charles G. Wridgway and R. J. Mooney have organized the Auto Auction Association of America. The first sale will take place on December 4.

Novelty Anyway—Commendable up-to-dateness is shown by the proprietor of the Koenig garage and machine shop at 179 West Main street, Tarrytown, N. Y., who has issued a map on which the best route to his shop is outlined in heavy black, while on the back are given some of the best tours around Tarrytown.

Bowman's Emissary—W. Tilford Jones, chief stockholder of the Sidney B. Bowman Automobile Co., of New York, sailed for Europe on Tuesday to attend the Paris show and arrange for 1906 importations of Clement-Bayard cars. He will endeavor also to persuade M. Clement to send over a racer for the Ormond meet.

Deere Doings—The Deere-Clark Motor Car Co. has started work on its new factory building at Moline, Ill. The plant will be 100 by 300 feet and will occupy 12 acres of ground. The Deere line will consist of a 22-horsepower two-seated car and a 2-ton commercial truck, designed by Mr. Clark, who is credited with 10 years' experience in the building of automobiles.

Going to Florida—The Wayne car is to be represented in Florida by a party of 18, which will travel south in a private car from the New York shows, in charge of Manager Kull, of the New York branch. The car will be side-tracked near the beach. Three servants will look after the wants of the visitors. Immediately after the close of the races the Wayne special will be sent flying to Chicago for the Chicago automobile show.

Jackson Agents—The Jackson Automobile Co., of Jackson, Mich., announces the following appointment of agents: E. P. Blake Co., New England representatives, Boston, Mass.; Jackson Automobile Co., distributor for the eastern states; E. K. Hauser, Washington, D. C.; Diamond Motor Car Co., Philadelphia, Pa.; East Liberty Auto Co., Pittsburg, Pa.; Standard Auto Co., Rochester, N. Y.; L. C. Howard, 1655 Broadway, New York city; Ormond Auto Co., Brooklyn, N. Y.; Paxson Motor Car Co., Cleveland, O.; Seidler & Minor Co., Detroit, Mich.; Hagmann & Hammerly, Chicago; Motor Car Co., Minneapolis, Minn.; David Bradley Co., Fond du Lac, Wis.; Jackson Automobile Co., St. Louis.

Digitized by Google

Mo.; Charles R. Johnson, Coldwater, Mich.; Charles T. Bisch, Springfield, Ill.; C. R. Dench, Erie, Pa.

Burr President—Louis E. Burr, with C. P. Kimball & Co., the carriage builders, for more than 20 years, has been elected president and general manager of the Woods Motor Vehicle Co., of Chicago.

New Partner—A. E. Schwartz, a graduate of the Paris Institute of Technology and formerly associated with the William Schwartz Co., of that city, is now associated with A. L. Kull in the ownership and management of the Wayne Automobile Co., of New York.

Pope-Toledo Agencies—The different concerns handling Pope-Toledo automobiles during the past season have all signed up for the same line during the coming season. The H. L. Keats Auto Co., of Portland, Ore., has taken the general agency for the states of Washington and Oregon.

In the Market—E. A. Jenkins, who has just bought from J. A. James his garage and taken over the Buick agency, announces he is anxious to hear from manufacturers of garage equipments, being on the market for lathes, turn tables, washing machine and brass flexible buffing outfit for use in the garage.

Packard Improvements—On the 6 acres of land the Packard Motor Car Co. recently purchased is being erected a two-story 60 by 175 feet structure, of wholly steel, concrete and glass which is designed to be absolutely fireproof. The new building will be used as an addition to the company's motor and chassis erecting departments. With this additional 21,000 feet of floor space the Packard people will have added 75,000 square feet of space to their plant in the last 10 months.

Lots Doing—The Standard Roller Bearing Co. has purchased the property of the Pennsylvania Iron Co. at Forty-ninth street and Marion avenue, adjoining its present plant. This gives the company a total of over 5 acres and a floor space of 145,000 square feet. Into the new place will be moved the annular ball-bearing and automobile axle departments and the brass foundry. Another purchase of land was made recently, space being secured from the American Ice Co., on which is being erected a foundry for making crucible steel castings.

Body Company Reorganized—The Pontiac Body Co. has been reorganized with R. F. Monroe, who held the controlling interest in the company and also the position of general manager, as principal owner. Mr. Monroe has purchased the interests of Chauncey Brace, H. F. Messenger, J. A. Jacokes, J. A. Graley, and Albro Green, who formerly held stock in the concern. He has associated with him in the business D. E. Strohn, superintendent of the factory, and John Parker, bookkeeper. The company has contracts with the Cadillac, Bloomstrom, Buick, Bartholomew, Peoria, Lebanon, Welch and Rapid automobile companies. Mr. Monroe states that the rumor that the company is about to become a branch of the Cadillac company is without foundation. He says the connection with the Cadillac company lies only in the contract to supply the latter company with bodies.

BUSINESS BRIEFS

Ashtabula, O.—C. L. Scrivens has opened a garage and salesrooms.

Columbus, O.—The Capitol City Automobile Co. has filed a notice of assignment.

Waterloo, Ia.—The Corn Belt Auto Co. has been appointed district agent for the Reo during 1906.

Columbus, O.—A plant for the manufacture of automobile bodies will be erected here by George Heinlein.

Boston, Mass.—Philip W. French has accepted a position as the sales manager of the Napier Automobile Co.

Des Moines, Ia.—W. W. Sears has recently been appointed agent for the Reo in Des Moines and vicinity.

LaCrosse, Wis.—F. J. Neetzel has taken the Rambler agency for western Wisconsin, but will not open his garage until next March.

Newark, N. J.—C. S. Calvert, formerly connected with the Motor Car Co., will have the local agency for the Winton next season.

Jackson, Mich.—The Jackson Body Co., manufacturer of carriage and automobile bodies, has been placed in the hands of a receiver.

Detroit, Mich.—The Detroit Motor Car Co. has secured the agency for the Peerless cars and is temporarily located at 170 Jefferson avenue.

Baltimore, Md.—A permit has been issued for the erection of a garage at the northwest corner of Mount Royal avenue and Charles street, for George Miller. The estimated cost is given at $55,000.

Pittsburg, Pa.—Excavating has been started at 5909-15 Center avenue for the new garage to be built by the Hiland Automobile Co. The estimated cost of the building is about $50,000. The floor space will be 21,000 feet, the first floor being occupied by the offices, while on the second are to be the reception rooms and the salesrooms. The Hiland company has taken the agency for the Thomas cars.

NEW INCORPORATIONS

Brooklyn, N. Y.—The Private Garage Co. has been incorporated with a capital stock of $2,000.

Newark, N. J.—The Newark Garage & Repair Co., of 727 Lake street, has been incorporated with a capital stock of $10,000.

Newark, N. J.—The Roseville Motor Co., whose registered office is 830 Broad street, has been incorporated with a capital stock of $25,000.

New York City—The Leon Rubay Co. has been incorporated to manufacture automobiles, cars, etc. The capital stock of the company is $25,000.

Forth Worth, Tex.—The Fort Worth Automobile Co. has been incorporated with a capital stock of $10,000 for the purpose of dealing in automobiles.

Albany, N. Y.—The Craven Sectional Tire Co., of this city, has been incorporated with a capital stock of $40,000, and will engage in the manufacture of automobiles.

Toronto, Ont.—The Toronto Motor Boat Co. has been incorporated with a capital stock of $40,000, and will engage in the manufacture of boats, launches, gasoline engines, etc.

Baltimore, Md.—The Mar-Del Mobile Co. is occupying a temporary garage at 872-4 Park avenue while its new building is being constructed.

Detroit, Mich.—J. P. Schneider, 187-189 Jefferson avenue, has relinquished the Peerless and Buick agencies, and has taken on the Pierce.

New Haven, Conn.—Owing to the stress of other business, C. H. Torrey has given up the Knox agency, which has been taken up by E. T. Hale, 166 St. John street.

Kansas City, Mo.—Coming directly from France, Lemoing, O'Beirne & Co. have opened a garage and repair shop at 1737 Grand avenue. They will handle the Panhard.

Toledo, O.—The Toledo Storage Battery Co., which makes the X-cell dry battery, is seeking a site on which to erect a new plant, its Ottawa street place being too small.

Pittsburg, Pa.—The shareholders of the Standard Automobile Co. are to vote January 15 on a proposition to increase the company's capitalization from $75,000 to $125,000.

Kansas City, Mo.—The Kansas City Motor Car Co. has succeeded the Caps Brothers Mfg. Co. and is building a factory at Sheffield, which will be ready the first of the year.

Kansas City, Mo.—The W. R. Dempster Machinery Co. has just completed an addition to its plant at Sixteenth and Walnut streets, where it will handle the Maxwell in the southwestern territory.

Chicago—J. H. Manning, who has been connected with the New York White branch with Carl Page, will hereafter be associated with the management of the Chicago branch with Webb Jay.

Indianapolis, Ind.—Announcement has been made of the sale of the Indiana Automobile Co. to Crawford Fairbanks, who has taken immediate possession. This company has the Winton agency for 1906.

Cleveland, O.—The Brock Garage Co., dealer in second-hand cars, has outgrown its present quarters at Erie and Bolivar streets and has been forced to rent another place two doors from its headquarters.

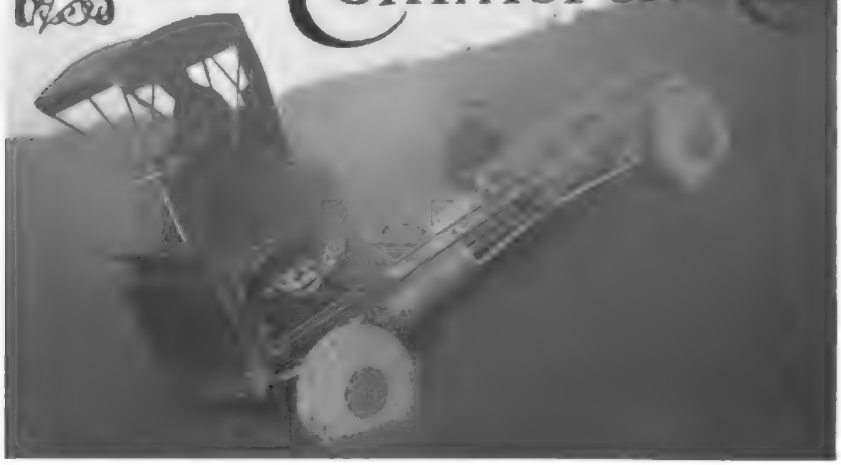
Minneapolis, Minn.—O. W. Anderson, 511 Masonic Temple, is interested in a company which proposes to build 100 automobiles during the coming year. A location somewhere in the Twin cities is being sought.

Bridgeport, Conn.—From plans by a Boston firm of architects the American Locomotive Co. will erect a large brick garage, 47 by 100 feet. Though it will have the height of a two-story building, it will have but one floor.

Detroit, Mich.—Charles H. Grant has resigned the management of the Ford retail store, and has taken a position with the Buick Motor Co., and after making a trip through the south in the interest of this company, will take up the management of the local branch, which the Buick company will shortly open.

Digitized by Google

The Realm of the Commercial



BACKING UP GRADE, THE FOUR-WHEEL DRIVE UNDER PERFECT CONTROL.

TRIES OUT FOUR-WHEEL DRIVE

Four-wheel drive in commercial trucks has an able exponent in the Four-Wheel Drive Wagon Co., of Milwaukee, Wis., which has been experimenting with a large 5-ton machine for the last 12 months. MOTOR AGE in its issue of July 27, gave a detailed description of the experimental truck which was driven by chains to each of the front and rear wheels, but the company has recently completed one of its shaft drive models which has double propeller shafts, one to the front and another to the rear axle for driving respectively the front and rear wheels.

Several of these machines are now being pushed to completion, the company is enlarging its factory space and promises are good for ready sales, as several concerns already having placed orders, among them being the Pabst Brewery Co., of Milwaukee, and the Sears-Roebuck Co., Chicago. The organization of the company has been completed several months and all necessary finances are in the bank and among its directors can be noted such men as Nelson P. Hulst, William W. Aldis and Edwin Reynolds. So far over $100,000 has been spent in experimenting with the machine and bringing it to its present state of development.

In experimenting with the machine a MOTOR AGE representative had an opportunity to watch it doing many of its little tricks, ordinarily considered impossible for heavy machines, such as climbing a 13½-inch curb from a standstill with the wheels touching the curb, traveling with a 6-ton load through snow 2 feet deep, pulling flat cars on a railroad track with a load weighing in all 44 tons and having an 8-ton load itself, the grade on the track being 3 per cent; pushing a 5-ton load of cement blocks over a 5-inch curb and traveling 7½ miles per hour over good roads with an 8-ton load. The four wheels being used for steering as well as driving, makes it possible to maneuver it in very close quarters, a 25-degree turning angle serving to turn it completely around in a circle equal in diameter to the length of the machine.

Like the experimental model, each truck has a four-cylinder motor carried lengthwise beneath the driver's seat with a multiple disk clutch connecting it with a sliding gear transmission carried beneath the truck platform to the rear of the seat. In the chassis view this gear set is shown. Extending backward from it is the primary shaft A which delivers the power to the propeller shaft running to the rear axle within the housing B. Another shaft C connects with the front axle, there being a bevel pinion on the end of the shaft B to transfer to the rear axle and a similar pinion on the front one. The use of four driving wheels calls for three differentials, one in the center of the rear axle, the same as in any touring car, a similar one in the center of the front axle and the third within the case D, where the power is transmitted from the shaft A to shafts B and C, this one acting between the front and rear wheels to care for any difference in wheel diameters occasioned by wear on the tires. The shaft A within the top part of the casing D terminates in a sprocket and this sprocket is connected by a 4½-inch Morse chain to another sprocket on the end of the main propeller shaft B, both sprockets as well as the chain being contained in the oil-tight case D and running in oil bath. The propeller shafts B and C are united near the casing D by a universal joint, which allows of the transmission of power through the necessary angle, caused by the weight, of this part of the shafts above the axles and so allows for depression of the springs. The sprocket on the propeller shaft B is pressed over the central differential. The gears connecting the two propeller shafts B and C with their respective axles, are both cut and hardened and made large to give added strength. A roller in the same plane as the propeller shaft takes up all thrust and lateral strain occasioned by the bevel gears. To protect the propeller shafts as much as possible each is encased in a continuous casing with each axle, a ball and socket joint in the casing covering the joint universal joint E at the center, which allows the casing to take care of all depressions of the springs.

The carrying of the propeller shafts as well as the large differential within the housing D is accomplished by the dropped frame member S in which is carried a bearing for the front propeller shaft. To support the large differential casing are used cross arms F that rest on the large radius rods G connecting with the front and rear axles and being supported from the center of the frame pieces by the triangular block H. Truss rods K assist the blocks H in supporting their load and for further strength the dropped piece S is braced to

FOUR WHEEL DRIVE DOING AN UP-GRADE STUNT

Digitized by Google

the rear part of the frame by the angle rods T crossing near their centers.

The facility with which the differential within D can be examined is meritorious. The small top part of the case containing the bearing for the shaft A can be removed by eight bolts being taken out when the shaft A can be, owing to its universal joints, turned to the side out of the road. After this the upper half of the casing D can be taken off, as can the top part of the housing on the rear propeller shaft, thus exposing half of the driving parts. The top half of the transmission gear box is removable as shown, exposing then all of the gears, the bearings and the shifting elements.

All four road wheels are steered through the horizontal shaft L having bearings in the blocks M suspended from the main frame. The shaft L terminates in front in a gear sector which meshes with a worm on the steering column, the latter operated by hand, and in rear ends with the arm N, which connects through the rod P with the yoke J, which is attached to the wheels and through which it is turned. A heavy tie rod R connects the steering yokes on each pair of wheels. A rotation of the shaft L turns the front wheels say to the right and the rear wheels to the left and an opposite rotation gives an opposite movement to the front and rear wheels.

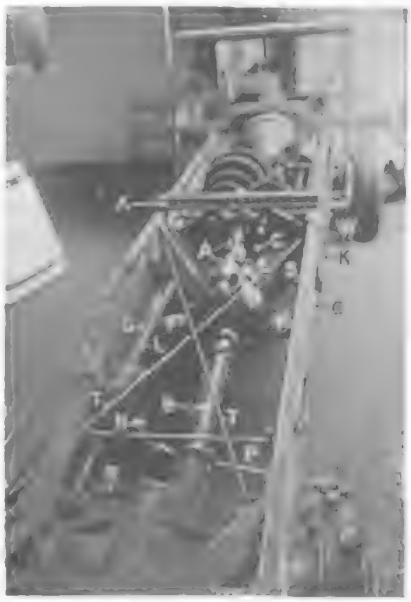
In the previous description of the truck the method of driving to each wheel through universal point within the wheel hub was shown, as was the construction of the wheels, each being formed of wedge-shaped blocks of wood that do the double duty of serving as spokes and acting as tires. The shafts within the axles casing for driving each of the road wheels revolve on roller bearings and have the usual connections at their inner ends with the differential wheels. Each road wheel is carried on ball-bearings, the balls ¾-inch in diameter and contained in hardened steel cups and cones. Special arrangements are made for lubricating all running parts by packing in oil where possible and fitting large oil cups in other places.

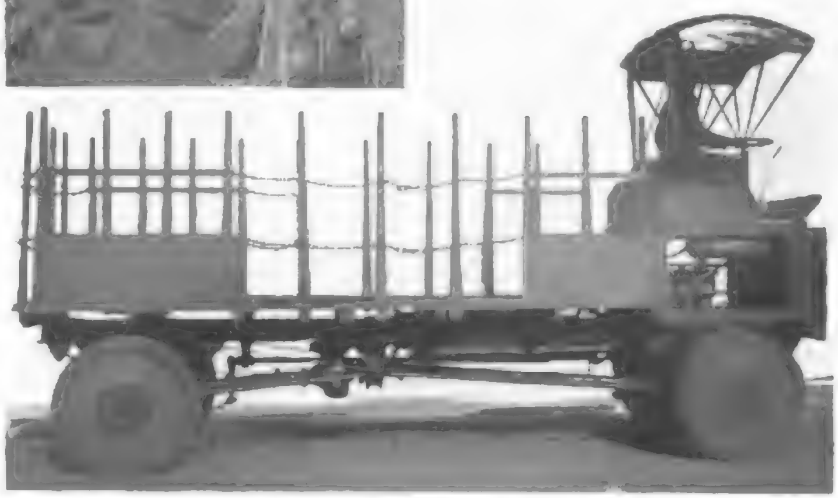
The frame work of the new shaft drive production is made to withstand the heaviest service, the main frame being of cold rolled ship channel steel, in one piece, being bent into shape at the corners and reinforced by heavy corner brace plates. The motor and gear box are carried on a three-point sub-frame, the rear support of which is on a cross piece resting on the top of the main frame pieces and at its center forming a support for the apex of an inverted V piece W in carrying the rear of the sub-frame. Bodies of different designs are furnished according to the requirements of the case. All brakes used are connected direct on the wheel hubs so that in case a break in the transmitting parts occurred the brakes would still be intact and sufficient to hold the machine with load on any grade.

VAN PROVES ITS WORTH

Those interested in commercial cars in England are still talking of the non-stop feat of a 16 horsepower Lacre delivery van, which was driven from Glasgow, Scotland, to London, a distance of 420 miles, in 30 hours, averaging 14 miles an hour. The gasoline consumption was 27 gallons, working out at 15½ miles per gallon. Three quarts of lubricating oil were used and the weight of the van, carrying three people and their baggage, was over 2 tons. It rained 23 out of the 30 hours and the roads in consequence were decidedly heavy. The first speed was used only twice and then on account of darkness. The engine only stopped once on the entire trip. That was when the fan belt jumped its pulley, 30 seconds being required to replace it. This was the only blot on the record and prevented an absolute non-stop trip being made.

CHASSIS OF THE FOUR-WHEEL DRIVE





COMPLETED 5-TON FOUR-WHEEL DRIVE TRUCK ON THE ROAD

It was not a new car that was used, the vehicle having covered several thousand miles in England and Wales on demonstrating trips. The start was made from the Albion company's works at Scotstoun at 7 o'clock Saturday morning, two drivers and an observer making up the crew, the drivers relieving each other at the wheel. The route followed was the one taken by the cars in the Scottish Automobile Club's 1904 reliability trial and carried the van through Hamilton, Douglas Mill and Beattock to Carlisle, thence by way of Kendal and Leeds to London. It was raining when the car started, but the crew expected to get outside the storm belt in short order. Going at 14 miles an hour, Carlisle was reached at 2:07 p. m., with the rain still coming down. The van did not seem to mind the weather conditions, though, and plugged merrily along through the slush, reaching Penrith at 3:30 p. m.

Ahead of the demonstrators was the climb over Shap, which, however, did not slow them, the ascent being made on top and second speed. As they got over this obstacle, darkness overtook them and two large paraffin lamps were lit. They proved inadequate, however, and had it not been for the fact that it was not pitch dark overhead, the driver would have had his troubles keeping the road. It was within 5 miles of Leeds that the fan belt slipped off, but this was soon repaired and the journey resumed, Leeds being reached at 11:30 p. m. This was the halfway point and as the van was moving along without a skip no further trouble was anticipated, and as it turned out, none was encountered.

Doncaster, Tuxford and Grantham were passed in the order named, the last named place being reached at 5:25 a. m. At Stamford the rain let up and besides this the travelers had plenty of light to guide them. Under these favorable conditions, they pushed forward rapidly and at Biggleswade, which was reached at 9:50 a. m., a telegram was forwarded to London informing the Lacre people of the approach of the van. The rest of the trip was all fun, the machine attracting attention because of its travel-stained condition. It was exactly 2 minutes after 1 p. m. when the Lacre company's London headquarters were reached and the weary 30-hour run ended.

RATHER EXPENSIVE

A service of electric automobile cabs, under the management of a German company, began operations in Buenos Ayres, Argentine Republic, on Oct. 1. The cabs are all supplied with taxometers, and the fare is 21½ cents for the first 1300 yards or a fraction thereof, and 4½ cents for every 350 yards thereafter.

Digitized by Google

Commercial Stepping Stones

A Californian's Home-Made Tractor

In Coal Business—A large 5-ton coal truck has been sold to the Hartwell Coal Co., of Chicago, Ill., by the Synnestvedt Machine Co. The truck has a working radius of 30 miles and a carrying capacity of 6 tons of hard coal.

Buenos Ayres' 400—Automobiles have become very popular in Buenos Ayres, Argentine Republic, and are having a large sale. From the registration numbers it would appear that there are about 400 cars in use in that city, not to speak of the large number to be found in other parts of the republic. Most of the cars are of French make; next in order come cars from the United States. A few English automobiles are seen in Buenos Ayres. The cars range in size from the heavy trucks to runabouts for physicians' use.

The End Near—That a horse bus will soon be as much of a curiosity in old London as the Roman chariot, is the way an enthusiastic motor bus manufacturer comments on the invasion of the world's metropolis by self-propelled vehicles. There are at present 3,500 horse buses running in the city and in less than 1 year, 150 motor buses have been produced. It is claimed that 1,000 motor buses would carry more passengers than the 3,500 horse ones. Each motor bus carries thirty-four passengers against twenty-six carried by horse ones. Besides the advantage of numbers, the greatest advantage of the motor bus is in the lack of noise and the greater speed resulting in less congestion at corners and in the busy districts.

Truck Tug of War—Playing tug of war with motor trucks was a pastime enjoyed by a few residents of New Haven, Conn., recently when a pair of heavy trucks met on one of the residential streets and one of the drivers challenged the other to a pulling match. The challenging driver had an Atlas truck rated at 24 horsepower and the other an air-cooled Knox truck of 20 horsepower. In the first trial the 1-inch rope uniting the rear axles of the contestants was snapped immediately upon the power being turned on, but more ropes were soon obtained and a second attempt made. This time the Atlas got the better start but the sturdy Knox had reserve power and started towing the Atlas after it, which lasted for 35 yards when the Atlas driver shouted enough and withdrew from the crowd.

Indians Start Line—Some of the Indians of the Rosebud reservation have bought touring cars, which they will operate through the reservation on a regular tariff and schedule for the benefit of visitors.

Test Order—After an exhaustive test the Oldsmobile Co., of New York, has made delivery of a commercial wagon to the Rankin Delivery Co., which will probably add others to its stock for delivery work in New Jersey and Connecticut. The wagons in question have a capacity of 1½ tons load.

Farmer Tests Motor—The agricultural motor, the much-talked-of and much-experimented feature of the gasoline engine in Europe at the present time, is interesting the farming community in America and already one agriculturist, in the person of Arthur Miller, of Aukum, Cal., has succeeded in coupling a two-cylinder marine type of water-cooled gasoline engine to an improvised wagon with good results. As the two illustrations show, the machine is crude to the extreme but with a weight of 4,500 pounds the maker claims it can haul a load of 3,000 pounds and draw as much more on an attached trailer. The motor carried in front is coupled to the ordinary wagon wheels, 4 feet 10 inches high each and fitted with narrow steel tires. The transmission used gives three forward speeds and one reverse and a double set of brakes operate on front and rear wheels, a lever near the steering wheel serving to apply each. The length of the wagon without trailer is 21 feet, the carrying space on each being 12 feet in length and 4 feet wide. The axles have a clearance of 17 inches in the lowest point.

Ground for Motor Truck Plant—The Packard Motor Car Co. during the past week purchased 6 acres of ground in Detroit immediately joining its present factory, which covers 6 acres, thus giving it a total holding of 12 acres on Grand boulevard. The intention is to erect upon this newly acquired ground a complete plant for the manufacture of its commercial vehicles. The company has been forced into this move by the call for motor trucks. During the 8 months that it has had its 1½-ton motor truck on the market it has met with marked success. To help meet the demand it was necessary to have a great deal more room; in fact, an entirely new factory, so that the company can devote the whole of its present plant to the manufacture of touring cars.

Oakland Awakens—The police and fire commissioners of Oakland, Cal., are considering the advisability of purchasing an automobile patrol wagon, owing to the increasing business of the police department and the long distances to be covered in some of the runs. When the matter was taken up at the meeting of the board recently Mayor Mott expressed himself in favor of an automobile patrol wagon, owing to the speed which could be made on long runs in cases of emergency, and the other commissioners expressed themselves as being of the same mind. Secretary Facett was instructed to correspond with the manufacturers of automobiles for the purpose of obtaining information as to style, cost, etc., when the board will again take up the subject.

Carries a Load and Hauls a Trailer as Well

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.
JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.
FRANK A. EGAN, Secretary, 152 Nassau St., New York.
FREDERICK B. HILL, Treasurer, 32 Bedford St., Boston.

National Headquarters Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

IE LEAGUE'S CONSULS

The A. M. L. has now about 600 cons in different parts of the United States l there is need of many more. Each con- holds a certificate of appointment. Apcations for appointment of consuls are sidered in the light of a pledge of good rk, and appointments are bestowed where dence of such work is supplied to the retary. The following named members 'e been appointed consuls in their rective localities since the last announcent: George L. Hailman, Pittsburg, Pa.; nes M. Horner, Edgewood Park, Pa.; E. Carter, Allegheny, Pa.; Alfred W. rris, Saginaw, Mich.

INUAL MEETING

The annual meeting of league members l take place in the city of New York inning on Monday, January 15, and end- on Saturday, January 20, 1906. A gen- l notice of this meeting will be pubed from time to time, and personal ice will be sent to each member of the anization. A hall will be engaged at a venient point so that members whose e is limited will have an opportunity to nd the meeting and visit the automobile ws at the same time. At these meetings ninations will be received and preliminsteps taken to elect officers and repreatives to compose boards of officers for t of the important states in the east the nominations thus made will be subted—probably by mail vote—for the apval of members in the different states. ommendations will also be received for appointment of working committees in erent departments of league work. Sepadays and hours will be set apart for different states so as to insure at each ting as full an attendance as possible. annual meeting ought to bring out a attendance of members of the Ameri- Motor League.

DUCED RAILROAD FARES

he Trunk Line Association, passenger rtment, has granted the league's apation for reduced rates to persons who nd these meetings, and it is important all conditions be complied with. The nk Line Association includes the Grand nk Railway, New York Central Hudson r Railroad, West Shore Railroad, New k, Ontario and Western Railway, Erie road, Delaware, Lackawanna & West- Railroad, Lehigh Valley Railroad, ral Railroad of New Jersey, Philahia & Reading Railway, Pennnia Railroad, Baltimore & Ohio Rail- and Chesapeake & Ohio Railway. It xpected that similar arrangements will be concluded with all associations east of the Rocky mountains. Commissioner Farmer of the Trunk Line Association has prescribed the following conditions which must be strictly complied with:

1—All persons from points within this territory, who pay full first-class fare of 75 cents or upwards, going to the meeting, shall be returned at one-third of the highest limited fare by the route traveled, on the usual certificate.

2—Certificates must be obtained from the ticket agent at starting points, or the nearest station issuing through tickets to New York, and to be valid for reduction of return fares must be endorsed by the secretary of the league and by a special agent of the Trunk Line Association, who will attend for that purpose on January 15, 16, 17, 18, 19 and 20, 1906. As members arrive these certificates should be deposited with the secretary.

3—Tickets at full fare for the going journey may be secured, under this arrangement, as early as Thursday, January 11, 1906, but not later than Wednesday, January 17. It is therefore of the highest importance that these dates be borne in mind.

4—In purchasing a ticket for New York the member should ask the ticket agent for a certificate and explain to him that he is going to New York to attend the meeting of the American Motor League. Certificates are kept at all principal railroad stations, and if not kept at the station where the member resides the agent will inform the member where they can be obtained. The member can then purchase a local ticket to the larger station and there obtain a certificate and through ticket.

5—A member holding a properly validated certificate may purchase his return ticket at the reduced rate at any time up to and including Wednesday, January 24, 1906.

6—Certificates issued under this arrangement are not transferable.

IMPORTANT NOTICE

These reduced rates have no connection whatever with the automobile shows. The meetings are held during show week to accommodate many members who are unable to come to New York twice during the same month. The railroad associations have refused to grant reduced rates in aid of mere industrial or mercantile exhibitions, like automobile shows, and will grant these rates only to associations holding conventions at stated times.

It will be important that every member attending these meetings should bring with him his membership card. On presentation of this card with the railroad certificate the secretary will be saved the trouble and delay of searching the membership roll to find whether or not that particular membership is unexpired.

MEMBERSHIP

Persons wishing to join the league and to enjoy the benefit of these reduced rates should immediately send names and addresses, plainly written, with 1 year's dues, $2, for each applicant. The railroad associations have notified the league that their agents will recognize the certificates of only those persons whose names appear upon the membership roll of the league. These reduced rates are granted to league members only.

RENEWALS

Each membership terminates 1 year from the date of joining. The date when each membership expires is recorded on the membership card held by the member. These dates are also entered in the league membership roll. Members are joining from week to week, and it follows that memberships expire in the same manner. Renewals will be received during the week of this meeting and persons thus renewing will be entitled to all membership benefits.

FINALLY

Remember that any person coming to New York within the dates mentioned may obtain a railroad certificate from the agent at the home town; but these certificates will be entirely worthless unless endorsed by the secretary of the league at New York. This endorsement will be written only upon certificates held by these members in good standing. If further information is required it may be had by addressing F. A. Egan, secretary, Vanderbilt building, New York city.

Digitized by Google

WINTON

Save Half The Work

of running a car by having a new Winton MODEL K, simplest and most easily operated car on the market.

To illustrate: Let's consider a single instance. The Diagram shows a narrow street. The car has traveled the dotted line (on the high speed gear) and the driver finds it Necessary to Turn Around. The street is not wide enough for a loop turn, and so the driver must Back and Turn in the direction of the long arrows.

With a Sliding Gear transmission that single change in direction requires the driver to make **NINE** Different and Distinct Movements with **hand and foot.**

Exactly the same turn is made by the WINTON (which has the **individual Clutch Transmission**) in **FIVE** Movements of the **hand alone.**

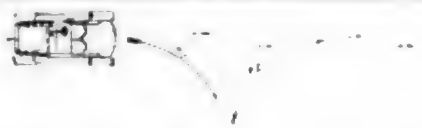
Here are the comparative lists:

SLIDING GEAR. (High gear engaged.)	WINTON TRANSMISSION (High gear engaged.)
1—Throw out clutch (foot).	1—Throw out high gear (hand).
2—Slide through intermediate, and low, into reverse gear (hand).	2—Throw in reverse gear (hand).
3—Let in clutch (foot).	3—With hand still on reverse lever, pull lever toward seat, throwing in low gear (hand).
4—Throw out clutch (foot).	4—Throw out low gear (hand).
5—Slide into low gear (hand)	5—Throw in high gear (hand).
6—Let in clutch (foot).	
7—Throw out clutch (foot).	
8—Slide through intermediate, into high gear (hand).	
9—Let in clutch (foot).	

And note this: On the Winton you can make an **instantaneous change** from reverse to low gear (or vice versa), **without throwing a foot clutch,** moving a hand lever and again letting in the foot clutch. Just **one move of the hand does it all.**

Also note that on the Winton an **instantaneous change** can be made from high gear to **Emergency brake** by a single forward thrust of **one** lever. **That's a great protection in a pinch.**

IS IT ANY WONDER THAT MANY MOTORISTS BUY THE WINTON FOR ITS SIMPLE CLUTCH SYSTEM ALONE?



Winton clutches run always in oil and take hold gently. **NO** jar, clash, bang, shock or breakage.

Winton gears of steel mesh with gears of bronze. **NO** steel against steel.

THE EASILY OPERATED WINTON MODEL K. Four-cylinder, vertical, 30-horsepower motor. Plenty of reserve power. Twin springs. Shooting Gear. Sure ignition and carburetion. Pneumatic speed control. $2,500, f. o. b. Cleveland.

The Upton American car. Specialized Equipment Delineator.

The Winton Motor Carriage Co.

CLEVELAND, O. Member A.L.A.M. **U. S. A.**

CATALOG No. 2 IS READY

Digitized by Google

FRANKLIN

What Light Weight Means

Speed, enjoyment, money in your pocket—all result from the light-weight construction of Franklin cars.

The same power carries them faster than it would a heavy car. They are easier on fuel, oil, repairs and immensely easier on tires—the most galling expense of all.

The given weights of Franklin cars are not estimates. They are actual weights. Put some of the so-called "twelve to eighteen hundred" pound cars on the scales and see the beam kick at "2000."

With Franklin cars the light construction also means strength. The highest-grade, toughest, nickel steel, aluminum and similar high-test expensive materials are used—each for its appropriate part and service; without regard to cost.

Franklin construction, beside that of heavy-built cars, is like the modern steel-frame building beside the old-fashioned granite and stone.

We can build roomier, lighter, and, at the same time, stronger, than heavy built cars could be for the same money.

Franklins cost 50 per cent more per pound to build than other cars.

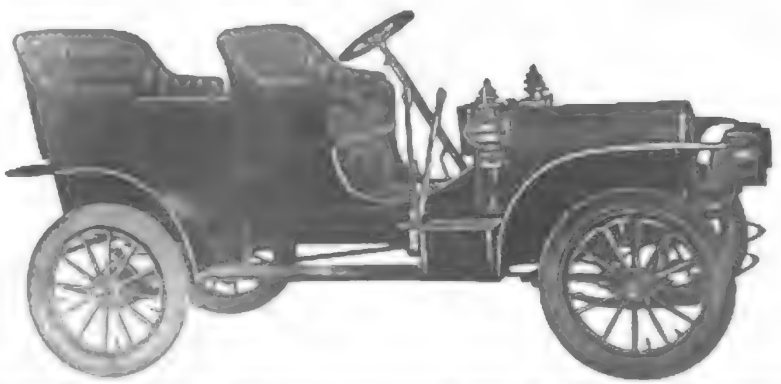
Their price is higher than for many cars of their respective types, but their cost is lower than any others for what they do.

Cost means more than price. Franklins not only give better service, but they save far more money than the difference in price.

Franklins are the most economical cars a man can own.

4 Models for 1906 ... Write for the book

H. H. FRANKLIN MFG. CO., Syracuse, N. Y., *M. A. L. A. M.*



Type G

4-Cylinder Light Touring Car

Air cooled. Shaft-drive. Sliding-gear transmission. Three speeds and reverse. New and perfect disc clutch. Force-feed oiler on the dash. Four or five passengers. Side doors. 88-inch wheel base. 18 "Franklin horse-power." 2 300 pounds. 45 miles per hour. $2,800, f. o. b. factory.

Full head and tail-light equipment.

This car combines more things that most motorists want than any other car ever made—speed; easy riding; roominess; side-doors; simple operation; economy;—first, last and all the time.

Most everybody wants this car. Probably you want it.

Digitized by Google

SOLAR LAMPS

THEY CUT LIKE A KNIFE THROUGH THE GLOOM AND DARKNESS

EVERY MAN WHO DRIVES AT NIGHT MUST HAVE A GOOD CAR AND A BETTER LIGHT

LET THE SOLAR LIGHT YOUR WAY

THAT'S THE SOLAR

GET OUR BOOKLET OR ASK YOUR SUPPLY MAN

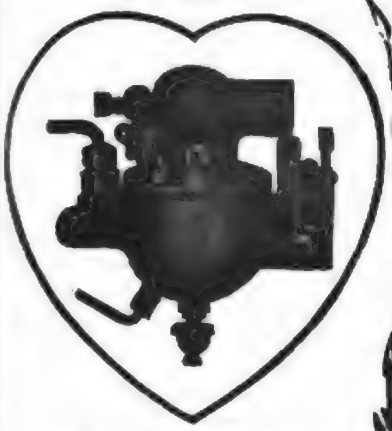
BADGER BRASS MFG. CO.
KENOSHA, WIS.

NEW YORK OFFICE, 11 WARREN ST.

Digitized by Google

TIME TO HOWL

THE HEART



OF THE AUTOMOBILE

The SCHEBLER Carburetor

Not only claimed but Proved to be the

STANDARD OF THE WORLD

HERE'S WHY

During the World's Record travels of a 1906 National STOCK CAR at Indianapolis, Nov. 16-17, in which 1 coo miles were covered in 21 hours, 58 minutes and 4-5 seconds, and 1,094 3-16 miles accomplished in the even 24 hours, hundreds of miles were reeled off with scarcely the variation of a second to the time of each.

THAT CAR WAS EQUIPPED WITH A

Schebler Carburetor

NOT ONCE during that marvelous record drive did the carburetor cause the delay of a second's time.

NEVER A SKIP
NEVER A MISS
NEVER A FALTER

A carburetor that gives a perfect mixture at all engine speeds, regardless of weather conditions is truly

"THE HEART OF THE AUTOMOBILE"

Is it any wonder that eighty-three of the largest marine and automobile engine builders in the United States and Canada are equipping their motors with the SCHEBLER? :: WHY DON'T YOU?

WHEELER & SCHEBLER, Mfrs., INDIANAPOLIS IND., U. S. A.

Agencies in all the Principal Cities of the World

P. J. Dasey.....
431 Wabash Ave., Chicago, Ill., Factory Repr.
Excelsior Supply Co.....Chicago, Ill.
Automobile Supply Co.....Chicago, Ill.
Beckley-Ralston Co.....Chicago, Ill.
E. J. Edmond..44th St. and 6th Ave., N. Y. City
E. B. Belcher.....26 Green St., Malden, Mass.
Jos. Brassard.....Central Falls, R. I.
Ellsworth Fdy. & Machine Shop, Ellsworth, Me.
National Electric Supply Co..Washington, D. C.
Smith Elec. Engineering Co...Washington, D. C.
The Wallace Bros. Co.....Norfolk, Va.
North Philadelphia Auto Station.....
.....3425 N. Broad St., Philadelphia, Pa.
F. C. Bowins..332 Baronne St., New Orleans, La.
Consolidated Supply Co.....Denver, Colo.
Chandler & Lyon Motor Supply Co.....
.....503 Golden Gate Ave., San Francisco, Cal.
Los Angeles Auto Car.....Los Angeles, Cal.
McCulloch & Boswell.....Winnipeg, Man.
Wilson & Co.....Ottawa, Ontario, Can.
Canada Cycle & Motor Co....Toronto Jct., Can.
Turnbull & Jones.....Dunedin, N. Z.
Geo. Neill & Co..38 Fenchurch St., London, Eng.

Digitized by Google

WAY'S MUFFLER

PAT. NOV. 16 and 30, 1897

WHICH WAY DO YOU WANT IT?

An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct.

Either Protect Your Throat

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

WAY'S Muffler

is a perfect throat and chest protector.

Comes with or without ear tabs as preferred.

Especially adaptable for winter motoring.

As easy to put on as your hat.

The Way Muffler Co.

MANUFACTURERS

Cor. 23d and Arch Streets, PHILADELPHIA, PA. J. HOWARD WAY, Prop.

When Writing to Advertisers Please Mention Motor Age.

Digitized by Google

In our last week's ad. we commented on the amount of advertising discussion that was

going on regarding the relative economy of air-cooled versus water-cooled cars in their consumption of gasoline and oil. We mentioned five other sources of expense concerning which the average purchaser is far more interested. They were Tire Expense, Repair Expense, Cost of Overhauling, and Loss through Depreciation, all for 5,000 miles, which is a year's riding for most people.

¶ Four-cylinder cars that are only driven on good roads are not especially costly as regards Tires, Repairs, and Overhauling, so owners of this class may consider some of our statements exaggerated. The man who has attempted a thousand mile country trip in other four-cylinder cars than a Stevens-Duryea, however, will usually find his expenses for these three items to total up between 60c and $1.00 a mile. In some cases where the roads are hard clay and rutty, the big tires when squeezed into these ruts, wear out so fast as to form the larger part of this expense. In other cases where the roads are uneven, unless mechanism in the form of a unit Power Plant Supported on Three Points, the twisting that the whole car gets loosens up the bolts and nuts, opens the joints in the body, and cuts out the bearings all through the Power Plant. As no four-cylinder car except the Stevens-Duryea is really accessible, the cost of new parts and the labor bills for putting them in, totals up to such an amount as to appear incredible except to the men who has been there.

¶ The Stevens-Duryea is very much the lightest weight four-cylinder car of its type made anywhere; despite this apparent paradox, we state without any hedging whatsoever, that the Stevens-Duryea, owing to its Unit Power Plant supported on three points, can be driven with perfect impunity over roads so rough as to be ruinous to cars not so built, and that owing to its light weight, it is possible to use tires small enough to fit in most ruts without injury.

¶ Three amateur owners of Stevens-Duryea cars have made such trips this past season. One ran from Massachusetts to Minnesota, 3,000 miles (including side trips) on $6.00 for repairs to broken springs, and the cost of one casing cut on a bottle. This trip was made last July, and the car has **never been in the repair shop to date.**

¶ Another has run some seven thousand miles, including a trip from Illinois to Massachusetts **and back**; he has not spent a cent for tires and less than $12.00 for repairs. His mileage has all been on country roads; he has traveled a thousand miles or more since his eastern trip, and has never been "in the shop." **All of his tires are good for a second year.**

¶ A Third Owner has made over ten thousand miles in Illinois, Wisconsin, and Iowa. He blew up two casings after they had done over 9,000 miles. He has been in two accidents, yet his total expense for tires and repairs is less than $150.00.

¶ As to loss through depreciation, a man who takes the time to make a list of all the various makes of four-cylinder cars put on the market during 1905, with their present status noted, will find that the Stevens-Duryea has the highest percentage value second hand of any. He will also find that of all the fifty or more different makes of four-cylinder cars put out in the spring of 1905, the Stevens-Duryea is the only one that has withstood a season's use without developing enough defects to make a "New Model" necessary for 1906.

¶ We are preparing a Booklet containing considerable information and data along these lines, including names and further particulars of the three owners above referred to. If you wish a copy, please ask for Book No. 3.

J. STEVENS ARMS & TOOL CO.

705 Main Street CHICOPEE FALLS, MASS.

Digitized by Google

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

has arrived and is now on exhibition at our showrooms. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. Equal to any car, built in any country at any price. Make and break spark. Sims-Bosch Magneto. Bevel gear drive. Continental Tires. Aluminum bodies.

MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

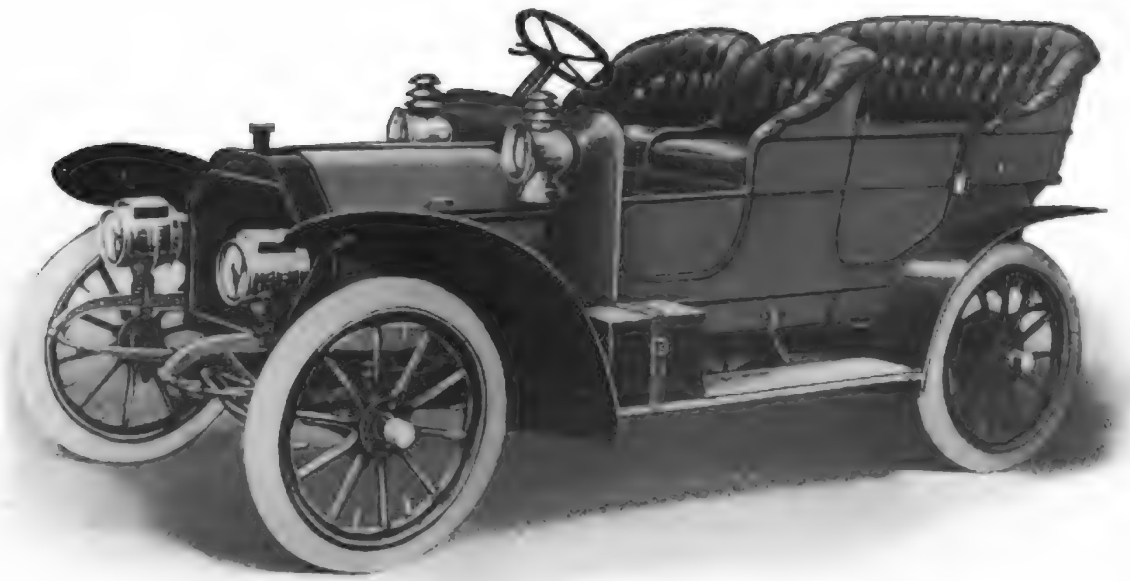
Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway and 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wanted in Unassigned Territory

Digitized by Google



OLDSMOBILE Palace Touring Car. Model "8." Price $2,250. It is only necessary to enumerate the different features of our Palace Touring Car to convince the man who knows automobiles of the sound judgment and thorough experience upon which its construction is based. To convince the most skeptical of its touring qualities, a practical demonstration is irresistible. In every line, at every point it is "there with the goods."

The four-cylinder vertical water-cooled motor easily develops 24 to 26 horsepower. Cylinders 4¼ inch bore by 4¾ inch stroke. All pistons are carefully ground and "run in" with a belt to insure accurate fit. The silent running qualities of the car are made possible by the perfect working of the motor, the careful adjustment of all parts and the muffler arranged longitudinally beneath the side of the car. The steering is through a worm and nut mechanism and has been thoroughly tested, and every possible weakness strengthened in order to insure absolute safety in this all-important part. A few of the other features are the careful balancing of parts, transmissoin, brakes, bevel gear drive, axles, etc. We invite your further inquiry.

Model "B," price $650, is our familiar Standard runabout with various new features. Speaking of the runabout, did you notice the record one of these machines made in the economy test of the New York Motor Club? Although it did not win on gasoline consumption because it was not run through the test at a very moderate rate of speed, purely for the purpose of cutting down the consumption of gasoline, it did make the best showing of any car in the matter of repairs, and demonstrated its ability to cover country roads under a load of four people at a good average speed. There was not a breakage of any part during the trip of 682 miles, and the car was universally commented upon as being the car which was always ready to start every morning with a turn of the crank. We would like to have you investigate this further.

The Oldsmobile exhibit at the Lewis & Clark Exposition was awarded a gold medal, the only award made an automobile exhibit by the Exposition authorities.

OLDS MOTOR WORKS

Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

idly send me information regarding cars checked. nterested.

B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

ss _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. 13

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. 13

Name _____

Address _____

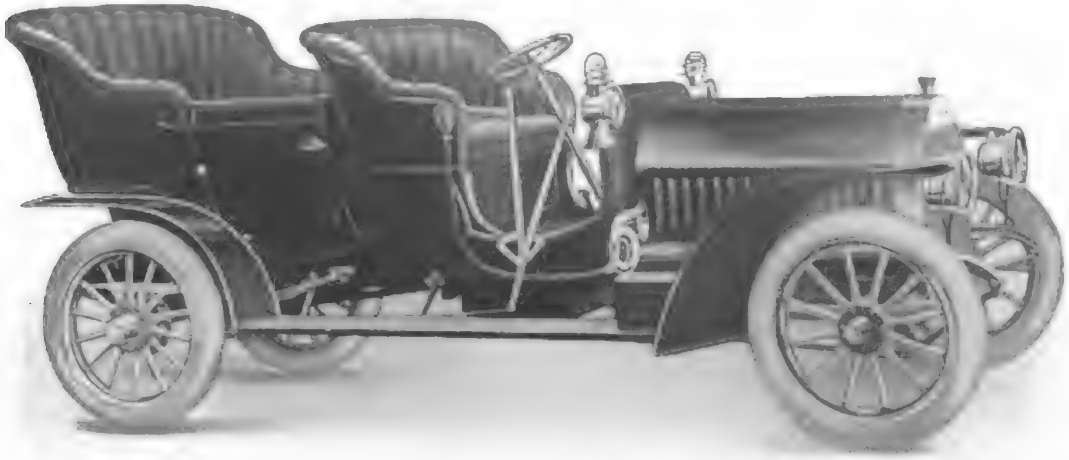
When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Wayne

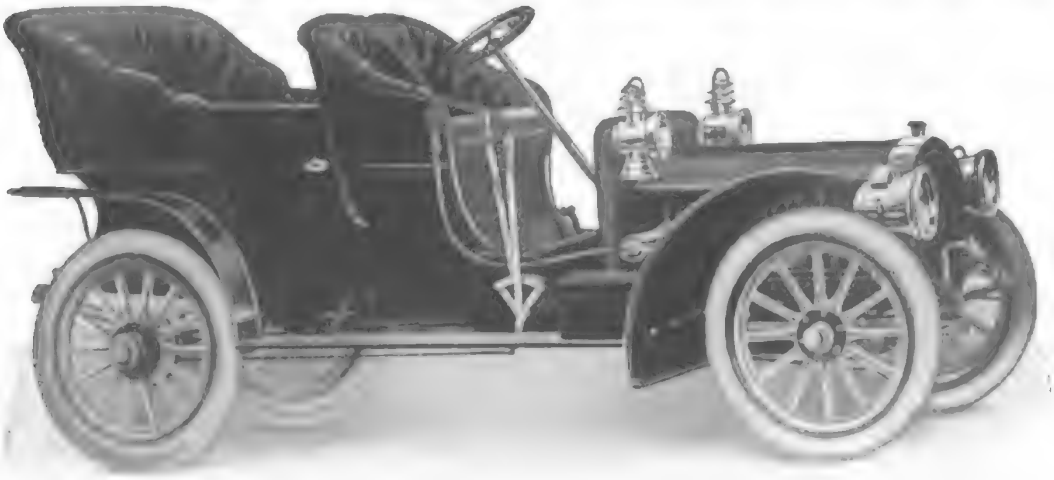
An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



Wayne Model F $3500

MOTOR, 4 cylinder vertical, cylinders 5½ x 5 cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, I beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34 x 4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights with generator, tail lamp and tube horn.

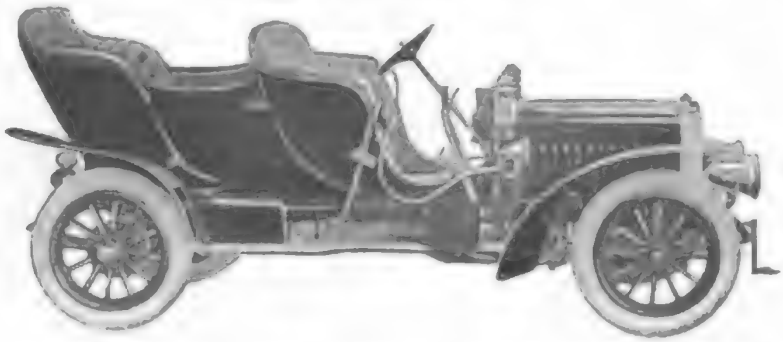


Wayne Model K $2500

MOTOR, 4 cylinder vertical, cylinders 4½ x 5 cast in pairs and water cooled. Engine develops by brake test 35 H.P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles same type as Model F. TIRES, 32 x 4. EQUIPMENT, same as Model F.

Digitized by Google

The Queen



One of Our Three New Models

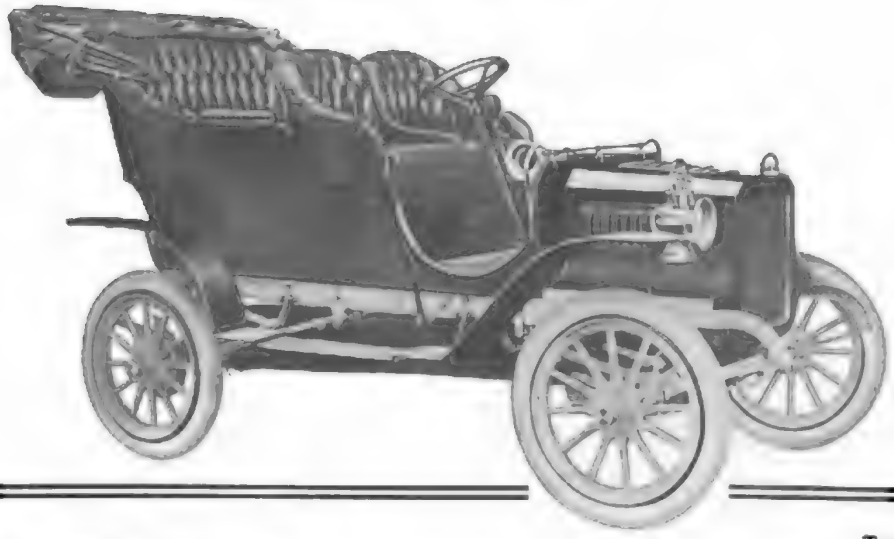
MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS—All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

Digitized by Google



REO Five Prizes Out of Seven

Touring Car
16 horse-power, 1600 pounds, 90-inch wheel base, five passengers, side-door detachable tonneau. Speed, 35 miles per hour. **$1250.**

Think of a sixteen horse-power car carrying its load 682 miles in six days at a total cost of $2.93 per passenger.

The REO Bus did this in the New York Motor Club's great six-day Economy Test, with exactly the same motor as in the REO Touring Car shown above—thus winning the National Trophy and two other prizes.

The REO four-seated Runabout shown below (price, $675), carried four passengers, 682 miles for $3.38 per passenger, winning the First Prize Gold Medal for all cars under $1500, and one other prize.

The Same REO

We did not have to change REO cars for 1906. They were right in 1905.

They were not an experiment, full of uncertainties and wasteful expense—to us and to you. They were the mature result of 20 years' successful experience in motor building; conceived and perfected by one of the foremost automobile inventors of the world.

The perfected positive oiler, short-contact commutator and more attractive bodies of this season's model, sharpen their efficiency and heighten their pleasure and convenience.

But in principle, design and construction REO cars were thoroughly right from the first and are right now.

Write for the Reo book which tells why

REO Motor Car Co.

Sales Dept., Lansing, Mich.

R. E. OLDS, Pres't **R. M. OWEN, Sales Mgr.**

Agencies throughout the United States

Digitized by Google

MITCHELL

WE HAVE COMMENCED DAILY DELIVERIES OF 1906 CARS

Complete line includes the following:

Touring Car — Model 4B, 4-cylinder 18-20 horse-power..... $1500

Runabout — Model 2B, 2-cylinder, 8-10 H. P., vertical motor, mounted in front... $750

Commercial — Built for all that the most rigid service demands. Particulars later.

and — two other pleasure car models that will prove sensations when announced.

"THE CAR YOU OUGHT TO HAVE AT THE PRICE YOU OUGHT TO PAY"

Write for catalogue — most elaborate ever published. It tells all.

Here's one of them

Model 4 B

4-cylinder vertical motor. 18-20 H. P. actual.

No radical features, just a good, substantial, common-sense and thoroughly tried out car that has made good in every particular.

Embodies the best features of the most famous cars — but is vastly different in at least one essential — the price. **$1500**

MITCHELL MOTOR CAR COMPANY, RACINE, WIS.

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Locomobile

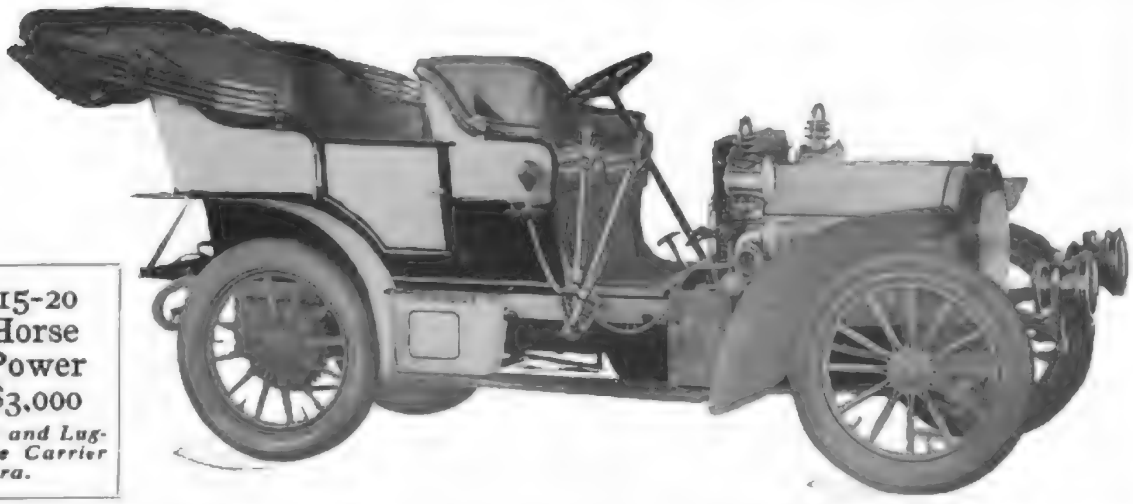
"EASILY THE BEST BUILT CAR IN AMERICA"

WE ANNOUNCE TWO NEW STYLES FOR 1906

A 15-20 H. P. Car, $3,000 A 30-35 H. P. Car, $5,000

both with complete touring equipment. These models are almost identical in design, contain the same carefully selected material, and are constructed with equal care throughout,—the result of years of careful and consistent manufacture of the standard type of four-cylinder touring car.

Locomobiles are fully equal in mechanical details and running qualities to the best imported cars, but are especially designed for American roads.



15-20 Horse Power $3,000

Top and Luggage Carrier Extra.

SPECIFICATIONS OF 1906 MODELS

TYPE "E" LOCOMOBILE, 15-20 H. P.

Price, **$3,000** ready for touring.
Equipment, 5 brass lamps, horn, tire, carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
Body, double side entrance, seating 5; fitted with top irons; color and striping optional; top and luggage carrier extra.
Motor, 4-cylinder, 3¾" bore, 4½" stroke.
Lubricator, large mechanical lubricator.
Carbureter, automatic, with balanced throttle valve.
Governor, centrifugal type, prompt and positive in action.
Ignition, make and break with iridium contacts.
Magneto, low tension, our own design and manufacture.
Aluminum Pan, placed underneath the machinery.
Clutch, cone type with ample surface.
Transmission, 3 forward speeds and reverse.
Drive, double side chains.
Double Universal Joint, between clutch and transmission.
Running Brake, double acting type, metal to metal surfaces.
Emergency Brakes, internal expansion type, metal to metal.
Combined Brake and Sprocket Drum, bolted to each rear wheel spoke.
Axles, "I" section hand-welded axles.
Tires, 32"x4" on all four wheels.
Wheel Base, 93".

TYPE "H" LOCOMOBILE, 30-35 H. P.

Price, **$5,000** ready for touring.
Equipment, 5 brass lamps, horn, tire, carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
Body, double side entrance, seating 5 to 7; fitted with top irons; color and striping optional; top and luggage carrier extra.
Motor, 4-cylinder, 4½" bore, 5½" stroke.
Lubricator, large mechanical lubricator.
Carbureter, automatic, with balanced throttle valve.
Governor, centrifugal type, prompt and positive in action.
Ignition, make and break with iridium contacts.
Magneto, low tension, our own design and manufacture.
Aluminum Pan, placed underneath the machinery.
Clutch, cone type with ample surface.
Transmission, 3 forward speeds and reverse.
Drive, double side chains.
Double Universal Joint, between clutch and transmission.
Running Brake, double acting type, metal to metal surfaces.
Emergency Brakes, internal expansion type, metal to metal.
Combined Brake and Sprocket Drum, bolted to each rear wheel spoke.
Axles, "I" section hand-welded axles.
Tires, 34"x4½" tires on all four wheels.
Wheel Base, 108".

The *Locomobile* Co. of America, Bridgeport, Conn.

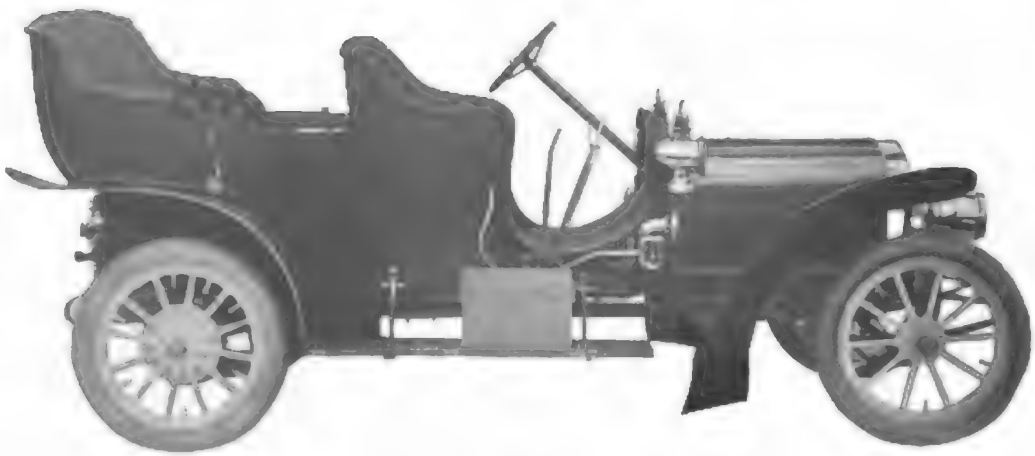
NEW YORK, 76th St. and Broadway.
PHILADELPHIA, 240 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

THE MARION



1906 MODEL FIVE
AIR COOLED

Weight 2100 lbs

Full Elliptic Springs

108-inch Wheel Base

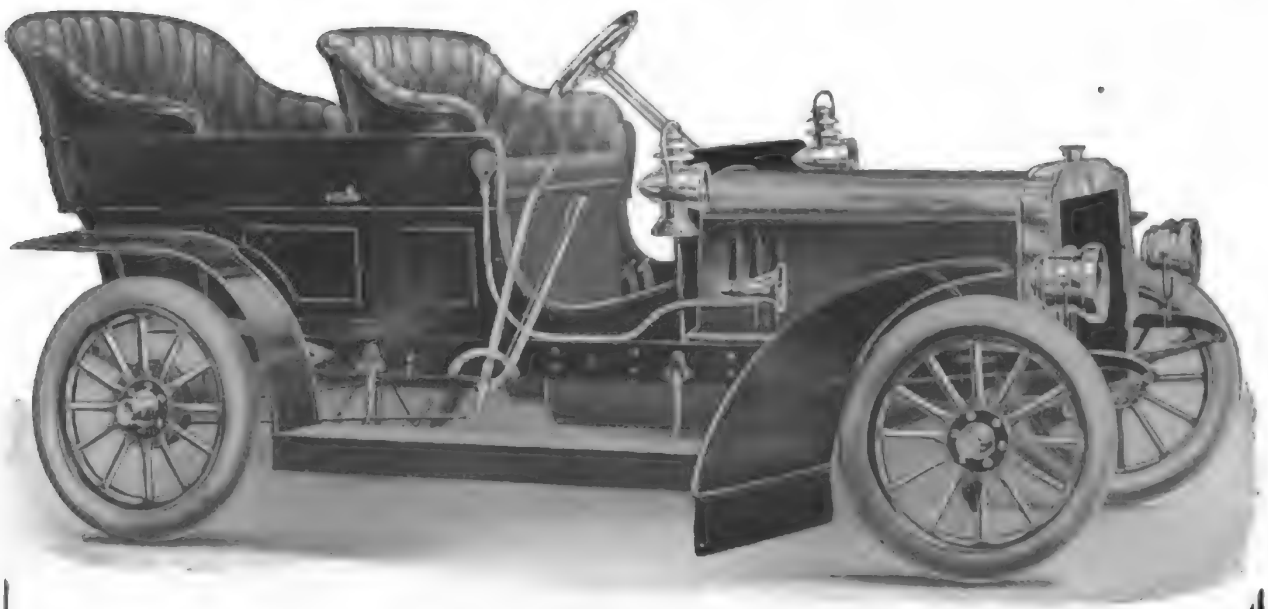
Sliding Gear Transmission

Multiple Disc Clutch

Price, $2500

THE MARION MOTOR CAR CO. INDIANAPOLIS INDIANA

Digitized by Google



1906 Ford 6-Cylinder Touring Car

Price $2,500

6 cylinder—40 h. p. 4 to 50 miles per hour on high gear. *Perfected* magneto ignition—mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2,000 pounds.

1906 Ford Runabout, as advanced as our touring car in design and even more surprising in price—will be fully illustrated and described early in December.

Both these Cars on exhibition at the New York Automobile Show. ... ...

Ford Motor Company

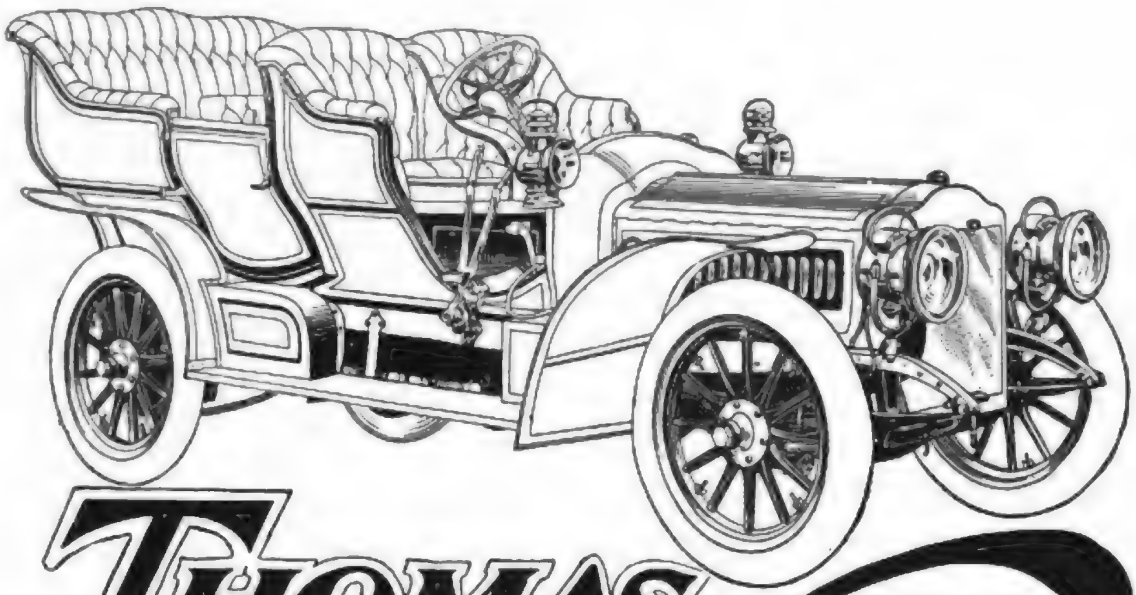
Detroit, Mich.

Member American Motor Car Manufacturers Association, Chicago

Canadian Trade Supplied by the Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

Digitized by Google

"Every stock car guaranteed to show sixty miles an hour before leaving the shops." E. R. THOMAS.



THOMAS

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

Buffalo, New York, November 10, 1905.

This is to Certify, That we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads, maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent grade with five people on the high speed and on very bad roads increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.
C. A. COEY, Chicago, Ill.
F. W. DART, Hartford, Conn
C. S. HENSHAW, Boston, Mass
F. B. HARPER, Beverley, Mass.
A. M. SPEAR, JR., Portland Me
A. S. ROBINSON, New York.
RAYNER GOODWIN, Bronklyn, N. Y.

STATE OF NEW YORK, }
COUNTY OF ERIE }

Sworn and subscribed to before me this 10th day of November, 1905.

ARCHIE L. DRAKE, Notary Public.

THE E. R. THOMAS COMPANY 1417 Niagara Street Buffalo, N. Y.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

ANNOUNCEMENT

CORBIN CARS FOR 1906

Model E, Light Touring Car, Price $2000

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs of special design and great flexibility. Wheels 32 x 3½ inches. Weight 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools constitute the equipment.

Model G, High Powered Runabout, Price $1800

The specifications of this model de luxe two passenger car are identical with the Model E with the exception of wheel base, 93 inches. Body latest French type for two passengers, divided front seats. Long, graceful tail box. The metal parts are lightened wherever compatible with safety. Speed 50 miles per hour.

Annular Ball Bearings Are Employed Throughout

Agencies in certain desirable territory are still open. Representative dealers are requested to communicate with us promptly to insure early delivery of cars.

Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St, New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati

Digitized by Google

"Every stock car guaranteed to show sixty miles an hour before leaving the shops." E. R. THOMAS

THOMAS

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

This is to Certify, That we the undersigned saw Jay Gould in the run of 40 miles per hour with five passengers (our average rate), maintaining a speed consistently in regular stock model 1906 Thomas touring car and went up a 4.6 per cent grade with five persons in the high speed and on very bad roads increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation and the power is extraordinarily clean and effective.

This is the only American built stock car that within our knowledge has made 40 miles per hour on ordinary roads, even without passengers.

THE E. R. THOMAS COMPANY 1417 Niagara Street Buffalo, N. Y.

ANNOUNCEMENT

CORBIN CARS FOR 1906

Model E, Light Touring Car, Price $2000

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs of special design and great flexibility. Wheels 32 x 3½ inches. Weight 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools constitute the equipment.

Model G, High Powered Runabout, Price $1800

The specifications of this model de luxe two passenger car are identical with the Model E with the exception of wheel base, 93 inches. Body latest French type for two passengers, divided front seats. Long, graceful tail box. The metal parts are lightened wherever compatible with safety. Speed 50 miles per hour.

Annular Ball Bearings Are Employed Throughout

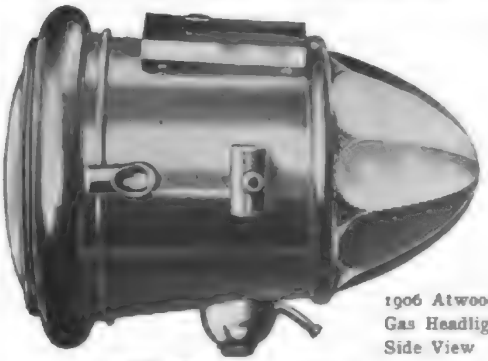
Agencies in certain desirable territory are still open. Representative dealers are requested to communicate with us promptly to insure early delivery of cars.

Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1400 Michigan Ave., Chicago. 115 East 7th St., Cincinnati.

Digitized by Google



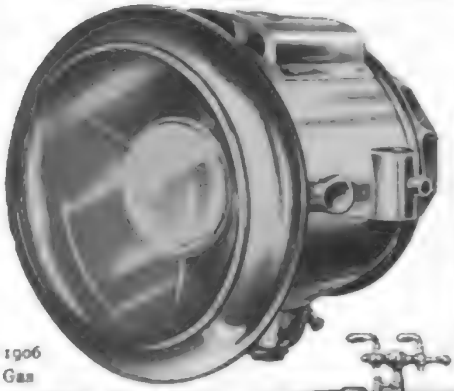
1906 Atwood
Gas Headlight
Side View

PRACTICE DOES MAKE PERFECT

FOR INSTANCE

ATWOOD LAMPS

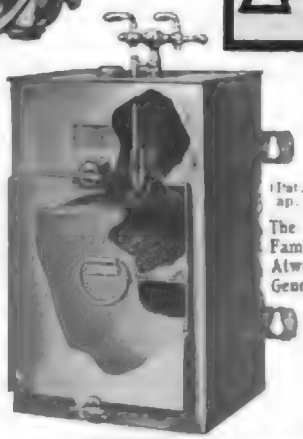
30 YEARS ON THE MARKET



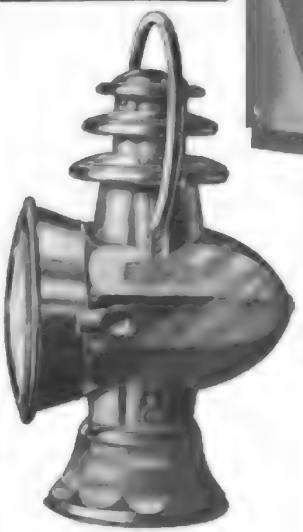
1906
Gas
Headlight—Front View

The 1906 ATWOOD GENERATOR is a Revelation

It surpasses anything ever placed upon the market. Is simple, effectual and absolutely has no equal at the price. WE GUARANTEE THIS.



(Pat. ap. for)
The Famous Atwood Generator



(Design patent applied for)
New Oil Side Light

THINK·WHAT·THAT·MEANS

To the man or concern believing he or it could, in 30 years' of continuous practice, practical experience and continuous effort, arrive at Absolute Perfection, in the manufacture of any line of goods, the above statement ought to mean considerable. It ought to settle all argument.

We KNOW our 1906 Line IS IN EVERY DETAIL the MOST PERFECT EVER PRODUCED

WRITE US Manufacturers should BY ALL MEANS see our line before contracting for 1906 **DO IT NOW**

ATWOOD MFG. CO., Amesbury, Mass.

Digitized by Google

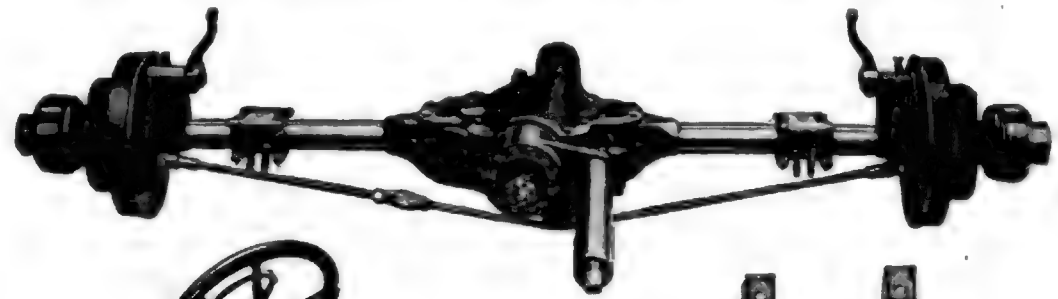
GARFORD TOURING CAR PARTS

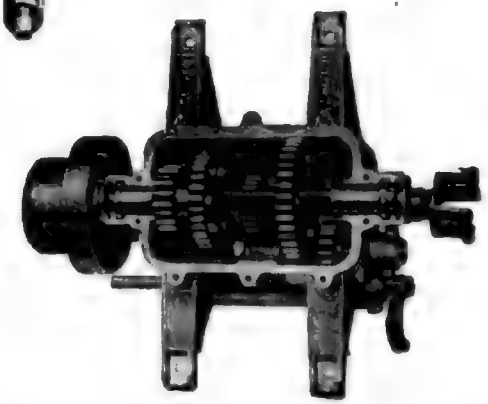
We don't wait for customers to test our parts before ascertaining if they are suitable for high grade touring cars. The model cars our engineers operate are given such severe service that the dependability of each piece is known to us in advance. Experiments are conducted at our own expense and risk. *Write for Circular No.12.*

ne size for cars weighing up to 2,400 lbs., and of 30 H. P. Other size for cars weighing up to 2,800 lbs., and of 50 H. P.

The Garford Company—Elyria, Ohio

SALES MANAGER—HAYDEN EAMES, AMERICAN TRUST BUILDING, CLEVELAND





GARFORD PARTS

REAR AXLE, Ball or Plain Bearing
FRONT AXLE, Ball or Plain Bearing
CHANGE GEAR
STEERING GEAR
CLUTCH
PROPELLER SHAFT
DISTANCE ROD and Bracket
LEVERS for Emergency Brake and Change Gear

Digitized by Google

An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. **All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new.** His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with **Goodrich Tires, 3x30 inches.** I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

The B. F. Goodrich Co.

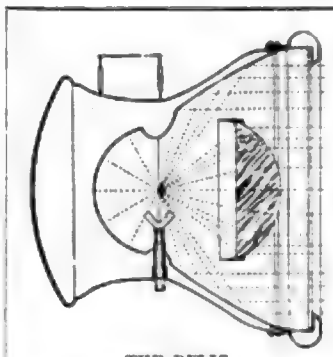
AKRON OHIO

New York, 56-58 Reade St. and 1615 Broadway
Buffalo, 731 Main St. — Cleveland, 420 Superior St.
San Francisco, 330 Mission St. — Chicago, 141 Lake St.
Boston, 161 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

CERTAINLY!

THE WORLD DO MOVE But Sometimes It Moves In a Very Small Orbit

FOR EXAMPLE



THE RELIC.
Theoretical Efficiency, 80 per cent.
Actual Efficiency, 5 per cent.

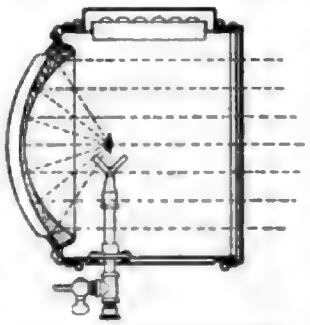
Here is a Searchlight which we used to make many years ago. We call it the Relic.

Theoretically it utilizes nearly every ray from its source of light.

Practically, in the presence of burning acetylene, the spun copper, silver plated reflector cannot be kept bright or even clean, and it absorbs most of the light instead of reflecting it. We discarded the Relic ten years ago, because of its ridiculously low efficiency compared with the Rushmore Navy Standard (short focus) Lens Mirror which we have since used.

The patents under which we manufactured the Relic have since expired, and it has been resurrected by some of the other fellows as the latest ever.

When you compare "Lamps" compare them as we did—in the dark—and see that their flames are the same size.



RUSHMORE NAVY STANDARD.
Theoretical Efficiency, 80 per cent.
Actual Efficiency, 40 per cent.

Rushmore Dynamo Works

PLAINFIELD, N. J.

Digitized by Google

Volier Horns

¶ The *reeds* are what stick most horn makers. Successful metal mixtures and tempering processes for horn reeds are the secrets of a very few men. The non-corrosive, vibratory metal reeds in genuine Volier Horns, which are unaffected by weather and which keep their tone indefinitely, are a feature which alone make Volier Horns superior to any other horns offered in America; *but,* in addition, there is the matter of

¶ The *bulbs.* In ordinary horns the bulbs are steam cured. They split and crack from use and vibration. In Volier Horns the bulbs are *chemically* cured — another secret process. The *chemical* curing makes Volier bulbs soft, pliable and tough. Volier bulbs do *not* split or crack.

¶ Horn fashions are set by the Volier, which we exclusively import from France. Witness the "Dragon" horn craze this season, founded on the Volier "Dragon."

¶ We can now give you illustrations and quotations on the 1906 Volier styles.

Volier "Courier"

The Post & Lester Co.

Hartford, Connecticut

SOLE AMERICAN DISTRIBUTORS

CADILLAC SALABILITY

The following letter was recently received from the Wm. Galloway Co., one of the principal Cadillac dealers in the state of Iowa.

WATERLOO, IOWA, Nov. 6, 1905.
Cadillac Motor Car Co., Detroit, Mich.

Gentlemen—We have just wound up our automobile season and in this connection wish to say that the trade has gone way beyond our expectations. The facts of the case are, we got all the trade there was in the town and around here.

Now, as I tell my customers it is not because they are buying machines from us that we are doing such a big business. It is simply the machine. The Cadillac automobile is *right.* You have struck the happy medium. The trouble with the average man who buys an automobile is that he is misled and thinks unless he buys a car with two cylinders and rated at from 16 to 40 horsepower he will not get a satisfactory machine. This is exactly where he is mistaken. I was mistaken myself in this same way because when I first got the automobile fever no man could make me believe anything was right but a double cylinder, but my mind has been changed and changed radically since I have handled the Cadillac.

What more does a man want than an automobile that will take him any place he wants to go, faster than he cares to ride, and will positively handle mud, sand and roads in a manner that machines of three times the horse power cannot touch? This is exactly our experience with the Cadillac automobile. We sold twenty carloads of them this year with not one single dissatisfied customer, and fully expect to sell 120 machines this coming season, but will only place our order for 50 as a starter.

I will tell you what sells Cadillac automobiles. First, it is the men who own Cadillacs telling their friends, and second, the machine itself. I consider it the most valuable automobile agency in America without a single exception.

Very truly yours,
THE WILLIAM GALLOWAY CO.
Dictated by
Wm. Galloway.

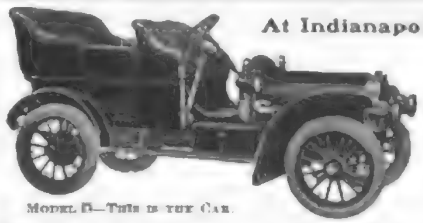
CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

Member Association Licensed Automobile Manufacturers.

Digitized by Google

The 1906 National



MODEL D—THIS IS THE CAR.

At Indianapolis, Ind., November 16-17, 1905

A 1906 National 40 H. P. stripped stock car covered

1094 MILES IN 24 HOURS

BREAKING ALL WORLD'S RECORDS FOR EVERY MEANS OF TRANSPORTATION

Write for particulars about the car that has *proved its absolute reliability of construction.* Our 1906 line is ready.

NATIONAL MOTOR VEHICLE CO.

1006 East 16th St., Indianapolis, Ind.

Member American Motor Car Manufacturers' Association, Chicago

MICHELIN

Tires of the Highest Class

Mr. Wilbern sends the following unsolicited testimonial:

Cincinnati, O., Nov. 3, 1905.

MR. E. D. WINANS, Sec'y & Gen'l Manager, Michelin Tire Co. of New York.

Dear Sir:—Thirty thousand miles on Michelin tires, covering twelve countries in Europe, above the clouds in Switzerland, below the sea in Holland, from bull fights in Spain to chicken fights in England, down historic Rhine, and back again to the "land of grind organ and Monks." I have bought all kinds of tires, every known make; but the Michelin are the best, last the longest.

With pleasure I can recommend them to all tourists. Will tour again next spring and summer in Norway, Sweden, England, Ireland and Scotland, and will wear nothing but MICHELIN tires on my 40 H. P. Hotchkiss.

Very truly,
(Signed) Edward V. Wilbern.

Director "Providence Savings Bank and Trust Co." Cincinnati, O.

If you want the Best, follow Mr. Wilbern and buy MICHELIN TIRES

MICHELIN TIRE AMERICAN AGENCY, Inc.

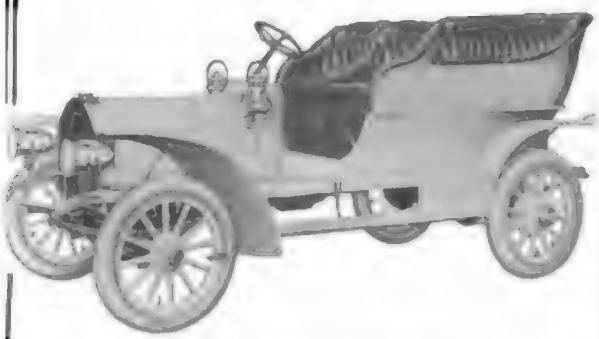
E. D. WINANS, Gen'l Mgr. 6 WEST 29TH STREET, NEW YORK Telephones: 760-761 Madison Sq.

Branches in principal cities of United States

Digitized by Google

Stoddard-Dayton

MODEL D



"AGAIN—as good as it looks."

The car that strikes the ideal medium between exorbitant frills and cheap unworthiness.

This year's model **Stoddard-Dayton** Touring Car represents the highest practical attainment in the art of automobile construction—all the time-tried and proven features of excellence retained, and only "improvements that **improve**" added.

As experienced, reputable manufacturers we have done our best, and the **results prove it.**

The **Stoddard-Dayton leads in sales**—because its worth is **not** upon **paper,** but **in the car.**

—Because—one machine sells another.

—Because—the makers back up the **agent,** and back up the **purchaser,** with a guarantee that works out as splendidly as it promises.

The handsomest car of all—standard finish, pearl gray with tan upholstering, other colors optional with purchaser.

The **Stoddard-Dayton** Model D 5-passenger Touring Car has a special type of 4½x5 in. 4-cylinder motor; water-cooled; frame of hot-rolled, high carbon, pressed steel, sliding gear transmission; three speeds and reverse, selective type, speeds can be changed instantly without clashing or friction; practically noiseless; entire transmission on roller bearings; mechanical lubrication; 30 to 35 horse power. Proportion of power to weight—one horse power to every sixty pounds. **$2250.**

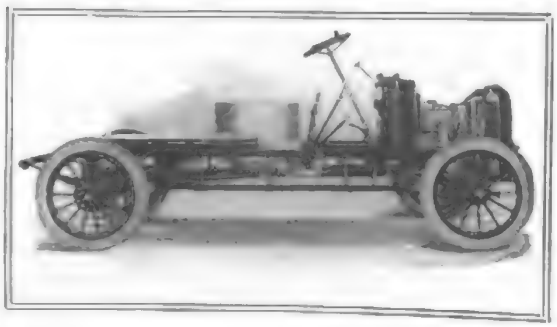
Write for our new catalog, fully describing the Stoddard-Dayton Touring Car, Runabout and Limousine for 1906.

The Dayton Motor Car Co.

DAYTON, OHIO

THE INCOMPARABLE WHITE

The Car for Service



Above is shown the chassis of the Model "F" White car which we are now delivering with touring car, runabout, limousine, victoria and landaulet bodies.

Steam power, as utilized in the White car, possesses unique advantages. There is absolutely no noise, no odor, no vibration and the speed of the car is controlled entirely by throttle. There is an ever-present reserve of power which is often found most useful.

The White steam generator is totally unlike any other steam-making device ever designed. To illustrate the radical difference, we might point out that in our generator the water is at the top and the steam at the bottom. In every other type of boiler the steam is at the top and the water at the bottom. The safety, simplicity and reliability of the system is demonstrated by the performance of the thousands of White cars now in use.

Write for White Bulletins which tell the story of White victories

WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

The Daimler Manufacturing Co.

announces that it is now ready to book orders for the

1906 American Mercedes 40-45 H. P.

PRICE $7,500 PRICE $7,500

Through our sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company — THE DAIMLER MOTOREN GESSELSCHAFT, of Unterturkheim, near Canstatt, Germany, we produce **the only authorized copy, part for part, of the**

1906 Mercedes

AUTOMOBILE

All the shop drawings of the 1906 Mercedes, showing the latest changes and advances embodied in this celebrated car, are now in our hands, awaiting your examination. Will mail you the 1906 catalogue on request.

SAVE THE DUTY

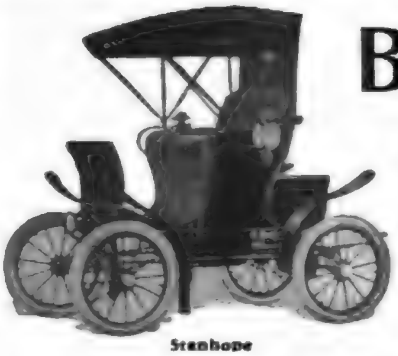
DAIMLER MANUFACTURING COMPANY

973 Steinway Avenue, LONG ISLAND CITY, N. Y.
NEW YORK CITY GARAGE, 10 West 60th Street

PENNSYLVANIA CLINCHER

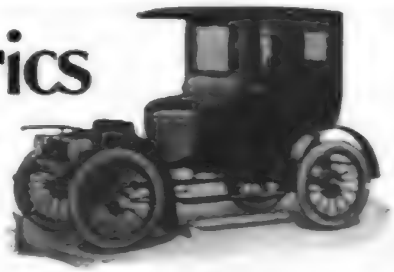
PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google



Stanhope

Baker Electrics

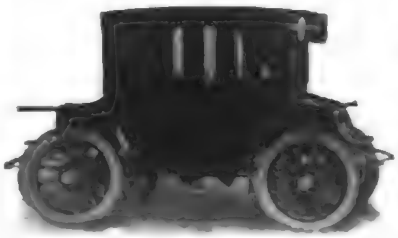


Depot Wagon

embody every possible good feature required to make them what they are so frequently called —

The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.

IMPERIALS, STANHOPES, SURREYS
DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co.

24 Jessie Street :: CLEVELAND, OHIO

Outside-Driven Brougham

Perfect Mechanical Construction

...nal of the Ohio Democratic party will suffer because of Mr. McLean's action," was his

THE GROWTH OF RUBBER TIRES

The Firestone Side-Wire Feature Adds Much to the Safety and Economy of Road Travel.

CLEVELAND, O., June 22.—Rubber tires are almost essential on all kinds of vehicles. They lengthen the service of commercial vehicles and add comfort to the occupants of pleasure vehicles. The "Firestone" tire has steadily won favor with the public. Its mechanical construction is so perfect that absolute safety is assured, while in point of economy it excels its closest competitor. Interested parties should write for full particulars to the Firestone Tire & Rubber Company, Akron, Ohio.

The automobile trade is thoroughly familiar with the REASONS for the almost universal popularity of the

SIDE WIRE TIRE

FIRESTONE has proven durable and satisfying.

Then Why Not Firestone?

Firestone Tire & Rubber Company, Akron, O.

New York Chicago Philadelphia St. Louis Boston Detroit

Digitized by Google

The Hartford Dunlop Automobile Tire

Postal No. 5
Watch for
Others to
Follow

The Hartford Rubber Works Co., Hartford, Conn.

KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 30,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

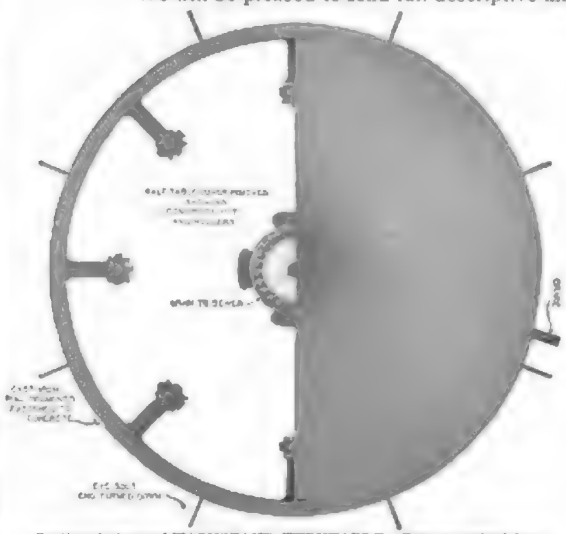
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

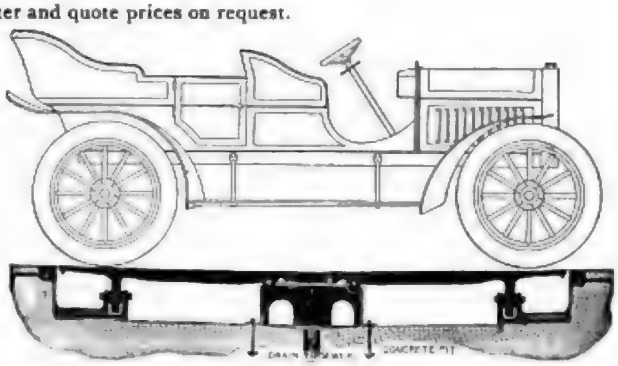
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

So Easy, So Reliable, So Satisfactory, So Safe, So Durable, So Different

is the verdict of all users of

The Fisk Mechanically Fastened Tires

Make your automobile run smoothly—to your mental, as well as your physical satisfaction—and maintain it economically by equipping it with Fisk Tires

They have an individuality of design—recognized by every experienced driver today as being in every way superior; a nicety of workmanship—that works wonders where wearing qualities are considered; and a design that is veritably "an accident insurance."

You cannot appreciate what can be recorded of these tires on a car until you have personally "tried them out."

The Fisk Rubber Co., Chicopee Falls, Mass.

BRANCHES

New York, 754 Seventh Ave.
Boston, 226 Columbus Ave.
Springfield, 40 Bridge St.
Philadelphia, 138 N. Broad St.
Minneapolis, 704 Hennepin Ave.
Atlanta, 103 N. Pryor St.
Syracuse, 423 S. Clinton St.
Buffalo, 893 Main St.
Cleveland, 818 Euclid Ave.
Los Angeles, 1034 Main St.
Detroit, 254 Jefferson Ave.
Chicago, 1251 Michigan Ave.
Kansas City, 1330 Main St.
St. Louis, 3908 Olive St.
San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

Digitized by Google

G&J TIRES
Hold the 100-Mile WORLD'S RECORD

At Indianapolis, Saturday, November 4, W. F. Clemens in a National car fitted with G & J Tires reduced the 100-mile track record to 1:53:21⅘ —not a moment's delay on account of tires. G & J Tires are speedy. They are the most serviceable tires on earth.

G&J TIRE CO.
INDIANAPOLIS

BOSTON BUFFALO CLEVELAND DETROIT CHICAGO DENVER SAN FRANCISCO

No More Freezing Troubles

You won't have the slightest bother with the circulating system of your motor-car in the coldest weather if you use

No-Mor Auto-Freeze

One charge lasts all winter and keeps the water from freezing even when the thermometer registers 10 degrees below zero.

Makes it unnecessary to keep your car in a heated barn, and you don't need to be afraid to take it out at any time.

You can let the car stand as long as you want to without the water freezing and without danger of the water pipes bursting.

No-Mor Auto-Freeze is already dissolved and doesn't clog the circulating system. Doesn't injure the mechanism in any way.

75 cents a gallon at dealers' or f.o.b. Cleveland, Ohio. **Sold only in 5 and 10-gallon cans.**

CHEMIST'S REPORT

The General Laboratory Co.
Chemists,
125 Quebec Street, Cleveland, O.

We have examined and tested No-Mor Auto Freeze and find that it will not corrode brass, aluminum, copper, galvanized iron or solder, and that it will remain fluid at 10 degrees below zero Fahrenheit. Another good feature of the product of this formula is that it will not crystalize out, hence no danger of clogging the circulating system.

The General Laboratory Co.
(signed) F. N. Seuland

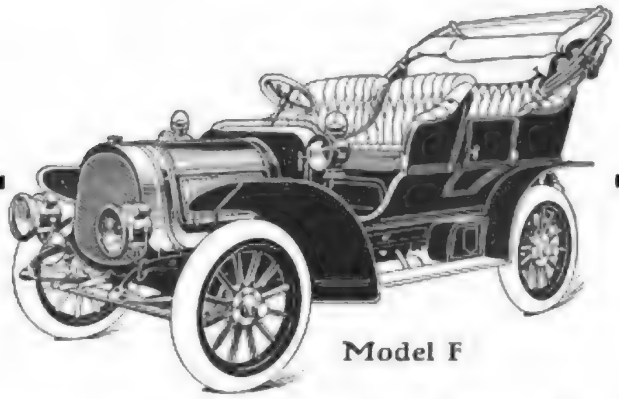
Dealers Can Make Money

during the winter months by selling No-Mor Auto-Freeze. Write for liberal terms and full particulars.

Owen Chemical Co., 45 Vincent St., Cleveland, Ohio

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google



1906 1906

Model F

Pope-Hartford Model F

Illustrated above, is the car you should buy because of its wonderful efficiency and durability, and because for quietness, speed and hill climbing qualities, it surpasses everything on the market at anywhere near the price. This new car has proven itself the wonder of the motor world. All parts are built on the **interchangeable plan** and are easily **accessible** for inspection and adjustment. We emphasize the following points: **Motor** consists of a 4-cylinder, vertical, water-cooled engine, with cylinders cast in pairs. **Transmission:** sliding gear, three speeds forward and reverse. **Carbureter:** specially designed, insuring economy in fuel consumption and maximum power. **Control:** throttle and ignition levers on single sector that does not revolve with wheel. **Drive:** bevel gear through propeller shaft to the rear axle. **Tonneau:** non-removable, dust-proof, double side entrance. **Design:** artistic in conception and execution. **ORDER NOW for EARLY DELIVERY** **PRICE, $2,500**

Pope-Hartford Model D is our two-cylinder, opposed, 18 H. P. double side entrance, touring car, with engine under the bonnet. A dependable machine of established reputation and just the car for the man who prefers to be independent of the professional chauffeur. **IMMEDIATE DELIVERY.** **PRICE, $1,600**

POPE MANUFACTURING CO., Hartford, Conn.

New York City: 1733 Broadway **Washington, D.C., 819 Fourteenth St.**
Boston, Mass., 223 Columbus Ave. **San Francisco, Cal., 451 Mission St.** } **A.L.A.M.**

THE BUSINESS MAN'S TRAIN

between

CHICAGO AND NEW YORK

is

"The Pennsylvania Special"

Pioneer 18-Hour Train

which runs every day over

The Pennsylvania-New York Short Line

Leaving Chicago, Union Station, 2:45 p. m., arriving New York 9:45 next morning. Returning leave New York 3:55 p. m., arriving Chicago 8:55 a. m. Train is equipped with Vestibuled and Electric Lighted Library, Smoking, Dining, Sleeping and Compartment Observation Cars.

Seven Other Daily Trains Chicago to New York

For Time of trains Pittsburgh, Baltimore, Washington and Philadelphia call at City Ticket Office, 248 South Clark Street, or address

G. G. BELTZHOOVER
District Passenger Agent
Chicago, Ill.

C. L. KIMBALL
Asst. General Passenger Agent
Chicago, Ill.

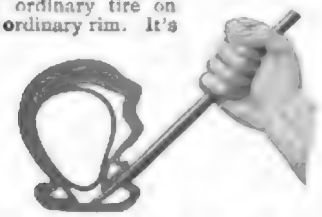
Digitized by Google

Why Goodyear Auto Tires Won't Creep

DID you ever try to force an inch tube over an inch and a quarter bar—or to put a pair of No. 7 gloves on a No. 8 hand?

You wouldn't be so foolish, would you?

But that's to all intents and purposes what the Automobile Man has to do every time he puts an ordinary tire on an ordinary rim. It's

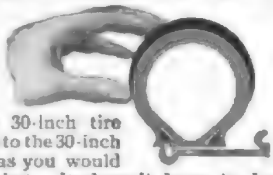


about as hard work as breaking into a bank, and he goes at it the same way, with a "jimmy" and other burglar's tools. Because a 30-inch wheel (for example) is really *31 inches* in diameter, when you consider the flange. So a 30-inch tire has to be forced over a 31-inch rim every time you put on a tire, or take it off.

It's a heart breaking job, even for a strong man, and it takes from half an hour to an hour each time you do it.

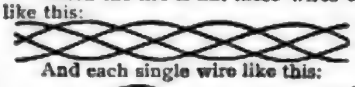
And after you have removed such a tire a few times, the base of the tire becomes stretched, and the fabric (used to strengthen it) becomes broken in places, until this tie becomes 31 inches in diameter instead of 30, a full inch larger that the face of your wheel. So you have to bolt it down, or it will creep, tear the valve out and cause all kinds of trouble. And even then you have to keep it pumped up continually as hard as it will stand.

Now the Goodyear Detachable Auto Tire can't creep, because, in the first place, it doesn't have to be *forced* on (if you use the Goodyear Universal Rim). The 30-inch tire slides right on to the 30-inch rim as easily as you would put on your hat. It doesn't have to be pried over a 31-inch flange.

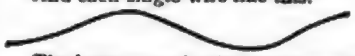


And next, at the first stroke of the pump, the tire begins to grip the rim like grim death, because there is a mesh or tape of piano wire vulcanized clear around the tire on each side of the base.

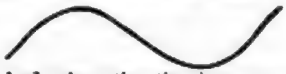
When the tire is flat these wires are like this:



And each single wire like this:



The instant you begin to pump, this wire begins to shorten like this:



And when the tire is pumped up hard, the wire mesh is like this:

If you put a Goodyear Auto Tire on a wood rim, and pump it up hard, the pressure will be so great that the base will squeeze a ridge in the wood.

So the Goodyear Auto Tire need be only *half* inflated, and it will still have a firmer grip on the rim than it is possible to secure with plates and bolts. This, however, is only *just one* of the good points of this trouble-saving tire.

You will find other points in our "Good News Book." It is vitally interesting to every manufacturer, dealer or user, for it shows the way to perfect relief from Tire Troubles. It's FREE. Ask for it.

THE GOODYEAR TIRE & RUBBER COMPANY - Wallace Street, AKRON, O.

Branches in the following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 262 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 48 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 506 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave

THE Compound WINS

Outclassing all Touring Cars regardless of price, in the New York Motor Club's Six-day National Economy Test, Oct. 30—Nov. 4.

Total Cost of Carrying Five Passengers $18.63

The motor went through the test without the slightest adjustment, proving conclusively that we have brought the compounding of a gasoline motor to a high state of perfection.

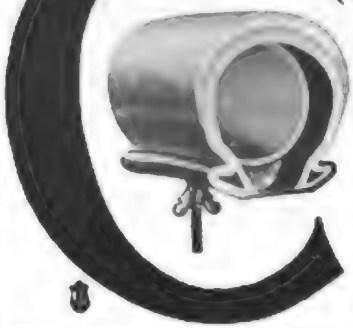
700 Miles Using But 43½ Gallons of Gasoline

Compound No. 6, driven by F. C. Carter, covered the entire distance at a cost of $3.73 per passenger, and negotiated all hills easily, including the famous Nelson's Hill on the road to Albany.

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

CONTINENTAL TIRES



"THE WORLD'S BEST"

They ran a Reliability Race in Australia the other day. Route was between Melbourne and Sidney—about the same distance and type of roads as between New York City and Buffalo. Mercedes car fitted with

CONTINENTAL TIRES—WON

The man who drove said the tires won the race for him and his car; said that Continental Tires meant a whole lot to any body who wants freedom from tire troubles. Others **who know** have said the same thing. **We know it**—that's why we speak of them as **"The World's Best."** Look it up for yourself.

BRANCHES

BOSTON, MASS., - - - 735 Boylston Street
BUFFALO, N. Y., - - - - 729 Main Street
CLEVELAND, O., - - - - 325 Huron Street
DETROIT, MICH., - - - - 260 Jefferson Ave

The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen'l Manager

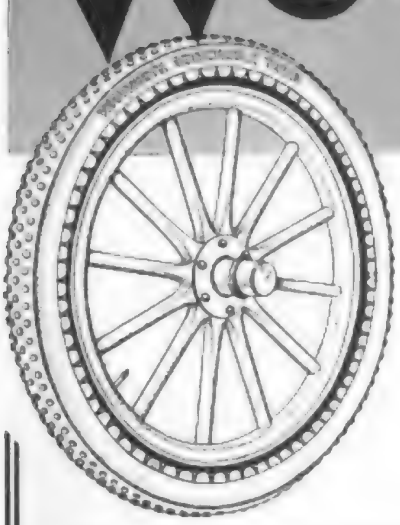
43 Warren St. - NEW YORK

FACTORY, HANOVER, GERMANY

AGENCIES

Chicago, Ill., Excelsior Supply Co., 237 E. Randolph St.
New York City, Motor Car Equipment Co., 55 Warren St.
Philadelphia, Pa., Jas. L. Gibney & Bro., 211 N. Broad St.
San Francisco, Cal., Pacific Continental Tire Agency, Golden Gate Avenue and Gough St.
St. Louis, Mo., Continental Tire Agency, 3908 Olive St.

WOODWORTH DETACHABLE TREAD



will save tire expense. It is practically puncture-proof. Prevents skidding, and all cutting and wearing of the tire surface.

Made of waterproof chrome leather studded with steel studs; held on the tire by adjustable side-wires—no cement or vulcanizing. Anyone can put them on; a wrench and pump are all the tools needed. Not high in price.

Write for Circular and Prices

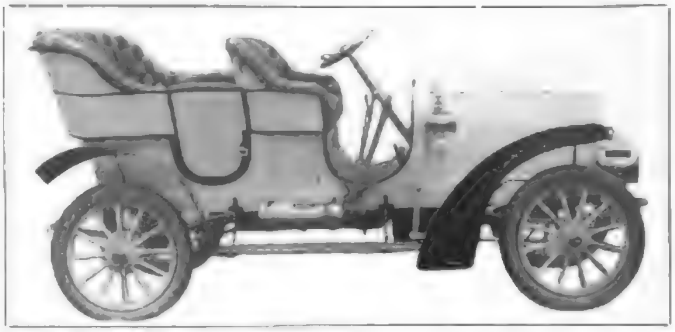
LEATHER TIRE GOODS CO., NEWTON UPPER FALLS, MASS.

Digitized by Google

Premier

AIR-COOLED

The Quality Car



Conspicuous in automobile construction by virtue of its beautiful design, great power, speed, ease of carriage, simplicity of manipulation and accessibility. It embraces 4-cylinder vertical motor, 4¼x4¼-inch bore and stroke, shaft drive, 3 speeds and reverse, sliding gear transmission, 32-inch wheels, 4-inch tires, 104-inch wheel base, beautiful cast aluminum curved dash, sight feed precision oiler, cast aluminum hood front and fan, luxurious upholstering, rear seat 40 inches (measure the other cars), irreversible steering gear, I beam front axle, ball bearings in front and roller bearings in rear axles, altogether comprising a car the equal of which we believe does not exist at the price.

Write for new Catalogue P

PREMIER MOTOR MFG. CO.

INDIANAPOLIS, U. S. A.

MEMBER AMERICAN MOTOR CAR ASSOCIATION

HAYNES

EXCLUSIVE FEATURES THAT MAKE IT THE BEST AUTOMOBILE

MODEL R. FOUR-CYLINDER TOURING CAR

Roller bearing vertical engines. Cylinders cast separately 5⅛x6 inches. 50 H. P. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears, and permits suddenly changing from high to lower speeds without releasing Master Clutch. Positive cooling system operated at very little cost of power. Individual and special lubrication. Carburetor our own make, assures perfect mixture in all temperatures and in all climatic conditions. No springs. Master Clutch has no leather or other wearable surfaces. Takes hold easily and gradually without jerking.

Shaft drive. Exclusive universal joints that do away with wear to pins so common to other joints. One piece nickel steel rear axle with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless all in a bath of oil. Roller bearing throughout. 108-inch wheel base. 50-inch tonneau with ample room for two chairs. Six to sixty miles an hour on high gear. Weight 2,750 lbs. Price, $3,500 f. o. b. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906 HAYNES—roller bearing engines, Master Clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES FACTORY and with exact reference to every other part. There is perfect harmony through the entire mechanism. This is the reason why in the HAYNES car there is less than 10 per cent loss of power between the engine and rear tires. It is the reason why its cost of maintenance, upkeep, and operation are so remarkably low and why for 14 years the HAYNES has had the acknowledged reputation of being pre-eminently THE car of quality.

Its cylinders are extra large. They hold compression and give power. The transmission device never allows the momentum of the fast moving car to be thrown against the power of the engine with its consequent strain to the entire mechanism, frame and tires so common with all other types of transmission. No danger of stripping bevel gears or of gearing climbing out of casing, which constituted the only objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum. Grey curled hair. Hand buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirement.

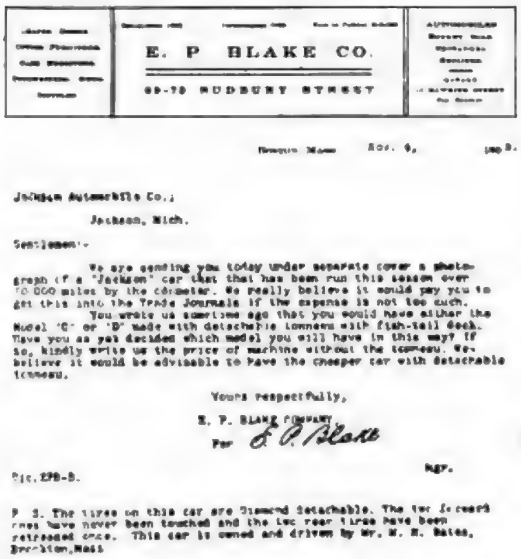
These are SOME reasons why the HAYNES is the BEST. Others are given in our catalogue No. 10, sent prepaid upon request.

"The Car That the Repairman Seldom Sees"

THE HAYNES AUTOMOBILE COMPANY, Kokomo, Ind.

CHICAGO, 1421 MICHIGAN AVE. **Member A. L. A. M.** **NEW YORK, 1715 BROADWAY**

Digitized by Google



E. P BLAKE CO.

69-73 HUDBURY STREET

Nov. 9, 1905.

Jackson Automobile Co.,

Jackson, Mich.

Gentlemen:-

We are sending you today under separate cover a photograph of a "Jackson" car that that has been run this season over 10,000 miles by the odometer. We really believe it would pay you to get this into the Trade Journals if the expense is not too much.

You wrote us sometime ago that you would have either the Model "C" or "D" made with detachable tonneau with fish-tail deck. Have you as yet decided which model you will have in this way? If so, kindly write us the price of machine without the tonneau. We believe it would be advisable to have the cheaper car with detachable tonneau.

Yours respectfully,

E. P. BLAKE COMPANY,

Per E. P. Blake

Mgr.

Pic. 298-B.

P. S. The tires on this car are Diamond detachable. The two forward rims have never been touched and the two rear tires have been retreaded once. This car is owned and driven by Mr. W. H. Bates, Brockton, Mass.

THE accompanying letter and picture explain WHY every agent we had on our list for 1905 has contracted for Jacksons for 1906; ¶ *Why* every "Jackson" driver is an advertisement; ¶ *Why* you, if you have the auto fever, should buy the Jackson; ¶ *Why* the Jackson has the world's record for five miles on a circular track for two-cylinder cars; ¶ *Why* the Jackson won second in the non-stop run from Chicago to St. Paul.

THREE MODELS:

MODEL "C" $1250.00, 20-24 H. P.
MODEL "D" $1500.00, 20-24 H. P.
MODEL "G" $2500.00, 40-45 H. P.

OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.
L. C. Howard, 1655 Broadway, N. Y.
Ormond Auto Co., Brooklyn, N. Y.
E. P. Blake Co., Boston, Mass. New England distributors.
East Liberty Auto Co., Pittsburg, Pa., 5069 Centre Ave.
Diamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.
E. K. Hauser, 1233 New York Ave., Washington, D. C.
C. R. Dench, Erie, Pa.
Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.
Paxson Motor Car Co., Cleveland, O.
Hagmann & Hammerly, Chicago, Ill.
Soidler-Miner Auto Co., Detroit, Mich.
The Jackson Auto Co., 3685 Olive St., St. Louis, Mo.
Chas. R. Johnson, Coldwater, Mich.
Chas. T. Bisch, Springfield, Ill.
The Motor Car Co., Minneapolis, Minn.
Sioux Falls Auto & Supply Co., Sioux Falls, S. D.
The David Bradley Co. of Wisconsin, Fond du Lac, Wis.

JACKSON AUTOMOBILE CO., :: Jackson, Mich.

BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

K. FRANKLIN PETERSON, 166 Lake St., Chicago.
THOS. J. WETZEL, 11 Warren St., New York.
} Direct Factory Salesmen.

CHAS. E. MILLER, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O.
} Sales Agent Carrying Stock.

POST & LESTER CO., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

200 South Geddes Street — SYRACUSE, N. Y.

Digitized by Google

E & J

MEANS

QUALITY In LAMPS

Lamp No. 70

REGARDING YOUR

1906 LAMP EQUIPMENT

We Guarantee to Please You in Both Quality and Price. Write us.

Edmunds & Jones Mfg. Co.

315 Riopelle Street, DETROIT, MICH.

THE

STANDARD AMERICAN COOLER

The Whitlock Cooler

Was used on the *Locomobile Racer that finished third in the Vanderbilt Cup Race.* It was never touched during the race. *It did its full* duty. It held its water and kept the engine cool.

THE ONLY CELLULAR COOLERS MADE IN AMERICA

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race.

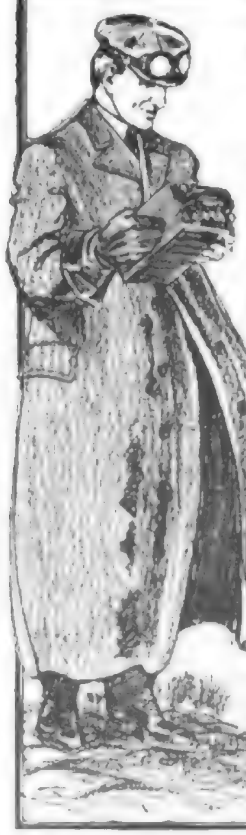
Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY.** The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

The Whitlock Coil Pipe Co.

Hartford ... Conn.



Why Not Buy Miles?

If your tank is full of gasoline, you know how far you can go. If you buy "Geecee" you have a tank full of "Electricity" and know how far you can travel. Our "Geecee" Style B-3 lasts 800 to 900 miles in a 4-cylinder car before it needs re-charging.

Why not buy miles instead of wasting money on cheap cells which don't last?

Royal Battery Co.

NEW YORK

National Sales Corporation

Factory Sales Manager

236 Broadway, New York

Automobile Lamp Manufacturers

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.

Badger Brass Mfg. Co. (Solar), Kenosha, Wis.

Commercial Acetylene Co., New York City, N. Y.

R. E. Dietz Co., New York City, N. Y.

A. H. Funke, New York City, N. Y.

Gray & Davis, Amesbury, Mass.

Manhattan Lamp Works, New York City, N. Y.

Motor Car Equipment Co., New York City, N. Y.

New York Coach & Auto Lamp Co., New York City, N. Y.

Rose Mfg. Co., Philadelphia, Pa.

Scoville & Peck Co., New Haven, Conn.

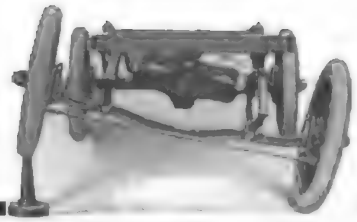
Also all Auto Supply Houses.

It is easy to avoid trouble—*simply insist upon licensed burners.*

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.



A "Rough Roads" Picture

We don't show the road; we prefer to show the reasons for the rough-road supremacy of

THE MARMON

"A Mechanical Masterpiece"

To any other car on earth an obstacle even less than a foot high would mean a vicious jolt to the passengers and a ruinous, binding, twisting strain to every part of the mechanism. A series of rocks, bumps, ruts and crossings means constant strain. But with the Marmon it's different. Over the roughest roads, the power plant and rear axle are always in alignment. And over any road, rough or smooth, the Marmon has a freedom from jar, jolt or vibration that is unknown in any other car. This is all due to an exclusive patented Marmon feature.

Double Three-Point Suspension

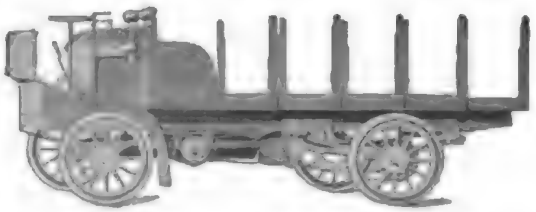
Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Eliminates the ruinous strain inevitable in the rigid suspension of all other cars. Means greater efficiency and less wear on all parts, tires included. Four cylinders, air-cooled. A carefully constructed, high-grade proposition for those who want nothing but the best.

Write for Booklet No. 1.

NORDYKE & MARMON COMPANY, Indianapolis, Ind.

(Established 1851) *Members American Motor Car Mnfs. Ass'n.*

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars.

MEMBERS A. L. A. M.

THE

Kellogg Multiple Gear Pump...

JOBBERS
DEALERS
USERS

This is the limit of perfection. ... 1906 Catalogue will soon be ready.

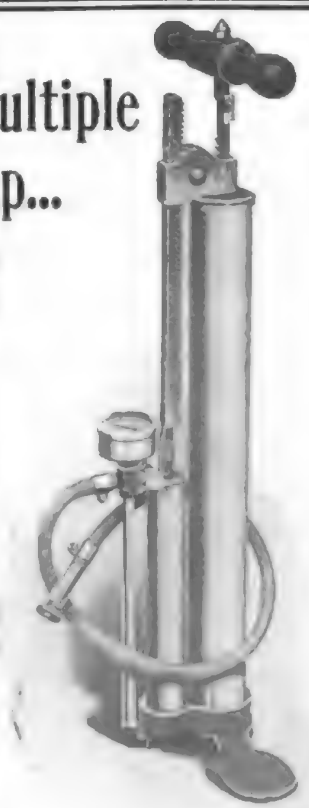
...*Write*...

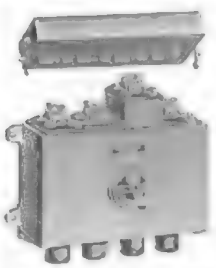
WRAY PUMP & REGISTER CO.

191-193 Mill St.

Rochester, N. Y.

Or Brandenburg Bros' & Allyer, 105 Reade St., New York City, 83 Lake St., Chicago, Ill.





REGARDING COILS

Our 1906 line is a revelation. By extensive tests of **every** nature it has **proved** itself the most **rapid**, most **economical**, most **durable** and most **reliable** in the world (bar none).

PITTSFIELD

means Perfection **sure**, in matters pertaining to the Ignition System of a motor car.

You cannot puncture or rupture a Pittsfield Coil. The **Perfect Insulation** is **PROOF** against these troubles. Pittsfield Coils are in **every possible detail**.

PERFECT

THE PITTSFIELD

1906 Special Jewel Spark Plug prevents fouling or short circuiting. Sparking point and chamber between core and shell *thoroughly cleaned* at each explosion.

THE PITTSFIELD

1906 *Commutator or Timer* is strong, reliable, and we guarantee a *positive contact under all conditions.*

Get details before contracting for 1906 requirements.

PITTSFIELD SPARK COIL CO., Pittsfield, Mass.

Digitized by Google

A TIMELY WORD TO

DEALERS

THE Model A GALE $500

Will be a genuine sensation in 1906

Every Up-and-Doing Dealer knows the value of handling *A GOOD CAR* at a low price. *THE GALE* stands alone in its class.

By all means get our proposition to dealers for 1906 ... It will interest you SURE. Address

WESTERN TOOL WORKS

Galesburg, Ill.

The Expected Revolution Has Come

If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 804 Amanda Street CLYDE, OHIO

MOLINE for 1906

Model "A" 30-36 H. P. $2500.00

Model "C" 18-20 H. P. $1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. $1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way.

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.

Advance circular ready for distribution.

Moline Automobile Co.

EAST MOLINE, ILLINOIS, U. S. A.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN
Runabouts
OLDS
TOURING
CARS
CADILLAC
FORD
THOMAS
Models 17 and 18
GENERAL
YALE
AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

Digitized by Google

"SOOT-PROOF" WINS

Five Prizes Were Awarded to the Cars Using "Soot-Proof" Plugs

The "McMurtry" Prize for the car having the least ignition trouble was awarded to a Reo using "Soot-Proof" Plugs. These cars covered a distance of 700 miles during the National Economy Test of the New York Motor Club, October 30 to November 4, 1905.

These cars had absolutely no spark plug troubles, and the original plugs were used throughout the entire run. Thus again has the "Soot-Proof" Plug demonstrated its superiority, reliability and economy.

"SOOT-PROOF" in Name and Fact
Non-short-circuiting *Self-cleaning*

C. A. MEZGER
203 W. 80th St., NEW YORK

Did Anyone Ever Hear

of trouble arising from fouled spark plugs in a Royal Tourist? We never did. In fact we have yet to hear of any owner of a Royal Tourist having any mechanical troubles with his car.

ROYAL

We have a full description of 1906 model ready to mail to you if you will send us your address. Will also mail booklet explaining performance of '06 model in Vanderbilt Trial Race.

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

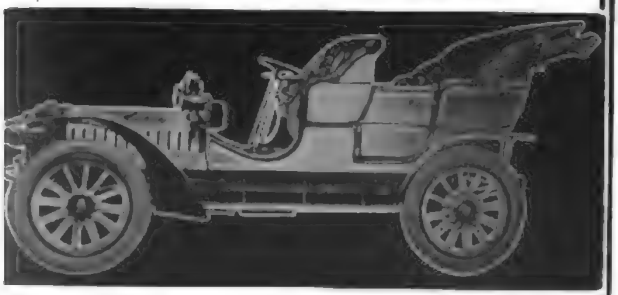
AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Autocobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile Supply Co., Lim., Toronto; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.

Member A. L. A. M.

AUSTIN

A LUXURIOUS CAR



THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.
GRAND RAPIDS :: MICHIGAN

8,000 MILES

Perfect Satisfaction, Never Breaking

HOTEL TOURAINE
BOSTON

July 3d, 1905.

BRAMPTON BROS., Ltd.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

1906 CARS

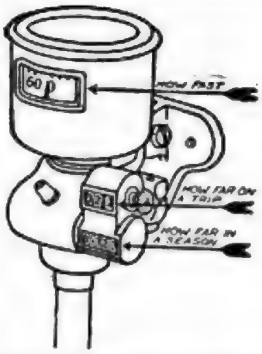
Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars

Catalogue mailed on request.

CHARLES E. MILLER
Manufacturer, Jobber, Exporter and Importer
Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 38th St., New York. Philadelphia—318-320 N. Broad St.
Boston, Mass.—202 204 Columbus Av. Cleveland, O. 408 Erie St.

Digitized by Google



THE AUTO-METER

for your new 1906 car

will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.** This information will be accurate and will help to determine positively

SPEED and DISTANCE

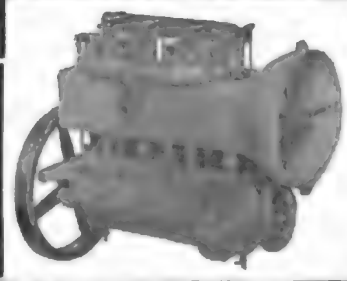
enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., 55 Roosevelt Ave., Beloit, Wis.

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

WE HAVE IT



Absolutely Tested by all kinds of Herculean Work

Positively Proved by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on outer end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

AIR COOLED VERTICAL

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3¼x4 inches
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¼ inches
Total bearing surface on Crank Shaft, 10¼ inches.
Bearing on Connecting Rods, 2x1¼ inches.
Bearing on Wrist Pin, 1¼x1¼ inches
Connecting Rods of drop forgings with phosphor bronze Crank Shaft.

Base and Crank Case of Aluminum
Width of Motor from end of arm to end of arm, 19¼ inches
Center of Crank Shaft to bottom of Motor, 4¼ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

GENESEO, JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

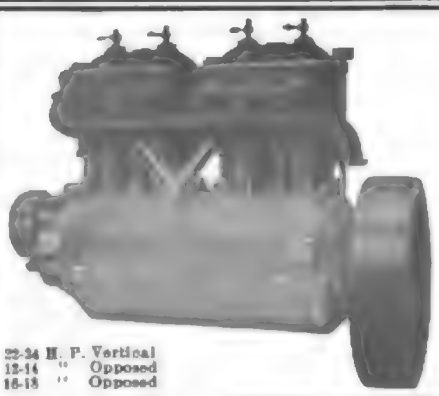
FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.
107 West Monroe St. :: Chicago, Ill.



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

THE LAMBERT

Model 7. 28-32 h. p., $2,000

A 16 h.p. Runabout

Our Noiseless Transmission

The most powerful machine on the market, a 1906 model. Write for specifications.

The Buckeye Mfg. Co.

ANDERSON, IND.

MEMBERS AMERICAN MOTOR CAR MANUFACTURERS' ASSOCIATION CHICAGO

The best lamp in the world will not—cannot, throw a good light if the generator clogs, freezes or does any one of several other commonplace things

On the other hand any good lamp is bound to duplicate the work shown above if equipped with a

PREST-O-LITE GAS TANK

No Waste
No Odor
Tips Never Clog
Always Ready for Service

SIMPLE ENOUGH
When you want gas, turn it on. When you don't, turn it off.

Never Affected by Extreme Cold

No time lost No inconvenience Write for booklet

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.

AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL

Automobile Knowledge

means

Money in Your Pocket

We are the only school that provides complete, practical, *money-earning* and *money-saving* training by mail in operating, repairing, constructing, and designing every kind of motor vehicle and motor boat.

We have special courses for *owners*, shop and factory *employees*, *chauffeurs*, *motor boat* and *motorcycle users*, and *others*.

There are only two ways of learning anything. One is slowly and tediously to gain the experience yourself; the other (and better) way is to take advantage of the experience of others.

Though we offer you the long, hard-learned, thorough experience of experts who have done prominent work in the development of the new vehicle, we offer this experience in such form that to teach it to you will take only a few minutes and cost only a few cents each day—*the few minutes and the few cents that you ordinarily waste.*

Our instruction has been prepared and is conducted by well-known men, of long experience and proved ability both in automobile engineering and correspondence instruction. It is strongly endorsed by *prominent manufacturers, club* and *association officials, racing men, trade-paper editors*, and others whose standing in the automobile field lends authority to what they say.

In the automobile industry, the demand for competent men is so great that ability, no matter how acquired, is considered above "pull" and length of service. This makes it easy for an ambitious man to qualify quickly for good wages and prompt advancement.

For further information, send us your name on the accompanying coupon. This will cost you only a moment of time and a postage stamp, which will be well spent for interesting and convincing literature.

FILL OUT TEAR OFF MAIL TO-DAY

The Correspondence School of Automobile Engineering

Suite 1346 Flatiron Building, New York City

Please send to my address by return mail, a free circular, giving full particulars of your correspondence courses.

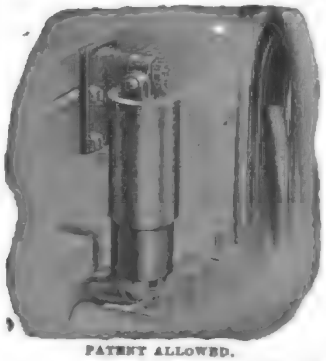
Name.....

Street and No.....

City..... State.....

or write for circular without sending coupon

Ride on Air



PATENT ALLOWED.

KILGORE Automobile Air Cushion

"Shock Eliminator"

On Good Roads

They allow you to use and enjoy the full elasticity of **Easy Flexible Springs. Observe** we say "full elasticity."

On Bad, Dangerous Roads

They control the too violent spring play, **BOTH UP AND DOWN. Observe** we say "both up and down." They transfer the load and strain from the springs to the axles. They prevent spring distortion and breakage. They lessen the wear and tear on tires.

There Are No Adjustments

This should interest you because: It adds to your comfort and safety. It effects a direct saving on "up-keep." Write for full particulars.

Kilgore Automobile Air Cushion Company

50 Columbus Avenue, BOSTON, MASS.

Digitized by Google

Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in..... **WILKES-BARRÉ, PA.**
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

GAS-AU-LEC

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

"THE SIMPLE CAR"

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

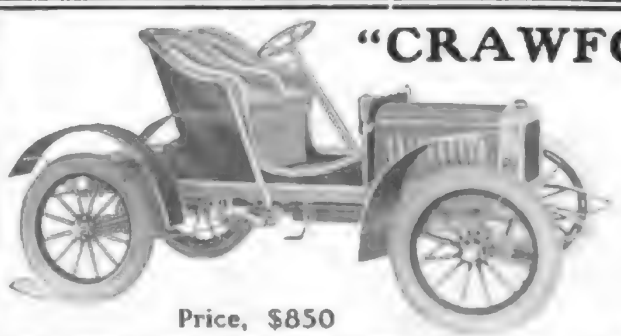
Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

"CRAWFORD" MOTOR CAR



Manufactured by the originator of the well known "Crawford" bicycles

The High Powered Runabout for City and Country Use.
2 cylinder upright actual 10 h. p. Wheel base, 78 inch.
Ball bearings throughout.
2 speeds ahead and reverse controlled by one lever.
2 powerful foot brakes.
High grade workmanship throughout.
Write for catalog.

Price, $850

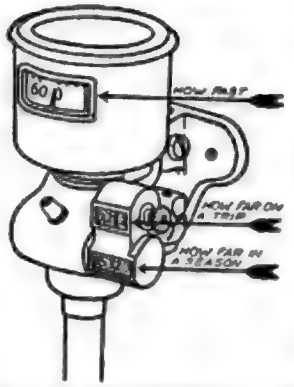
CRAWFORD AUTOMOBILE CO. **Main Offices and Factory: Hagerstown, Md.**

New Amsterdam Motor Transportation Co., 152 W. 58th St., Sole representatives for New York City and vicinity

Digitized by Google

THE AUTO-METER

for your new 1906 car



will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.** This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 148 Federal St., Boston Mass. Warner Instrument Co., 1631 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.

S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE, but cannot cut the journal.

In ordering Phosphor Bronze Castings note adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

Pat. allowed

"THE GREATEST YET"
SO SAYS AN OWNER OF
THE IMPERIAL WIXON
Compound Air Pump

and you'll say the same thing after you have tried it and "you can try it before you buy it."

$5.00 ON APPROVAL

Adds to the life of a tire.
Works quickly, easily.
The perfect pump for motor cars.

Ask any dealer or write us

IMPERIAL BRASS MFG. CO.
249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

Pressed Steel Frames

AND STANDARD PARTS

Automobile Manufacturers using our pressed steel frames on their machines are always certain that they have the best of frames procurable in point of reliability. We have recently increased our capacity and are equipped to turn out our standard frames, or frames of special design, in quantities for early delivery. We have presses also for making heaving stampings and pressings of all descriptions and are prepared to do any work in this line. We also make a complete line of

Rear Axles, Front Axles, Clutches, Change-Gears, Propeller Shafts, Steering Columns, Hubs and Other Automobile Parts

A. O. SMITH COMPANY
MILWAUKEE, WISCONSIN

Hayden Eames, Sales Manager, American Trust Bldg. Cleveland, O.

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

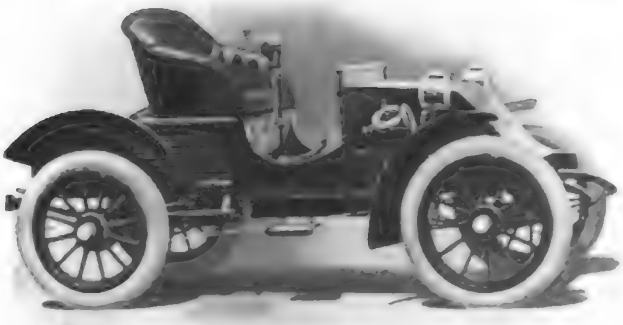
Mr. C. F. Splitdorf. June 24th, 1905.
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

Digitized by Google



ADAMS-FARWELL

The car with revolving air-cooled motor

If interested send for copies of letters received from those who have purchased 1904 and 1905 models. Now made in six models.

Prices from $2,000 to $4,000
Motors 20-25 h. p. and 40-45 h. p.

NO WATER NO RADIATOR NO FLYWHEEL
NO FAN NO MUFFLER

THE ADAMS COMPANY, Dubuque, Iowa

Chicago Salesroom, 1536 Michigan Avenue

DIETZ

THE
DIETZ
OIL LAMPS

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York
ESTABLISHED 1840

"20TH CENTURY SOAP"

One Pound Can 10c

3½ Pound Pail 25c

15 Pound Pail 75c

Invaluable for ALL Cleaning Purposes About a Garage

Nothing can compare with it for cleaning and polishing the highly finished surfaces of an automobile

CONTAINS NO LYE. Made of Strictly Pure Vegetable Oils.

ABSOLUTELY A PURE SOAP

The Pure Oils of which it is made are beneficial to the skin, and keep the hands in good condition.

TRY IT TO-DAY

Keeps Your Car Bright

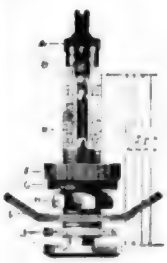
Keeps Your Car Clean

Makes Old Cars Look Like New

HOFFHEIMER SOAP CO.
CHICAGO

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895



SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires; our No. 777 Valve being the standard for 2 1-2 inch and 3 inch tires, and our No. 725 Motor Valve being the standard for all tires larger than 3 inch.

SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

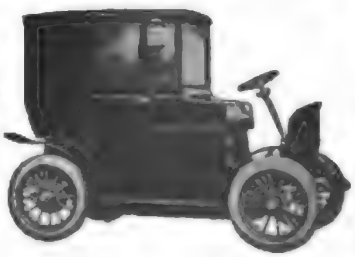
A. SCHRADER'S SON, Inc., 28-30-32 Rose Street, New York

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington R. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

MUD GUARDS

HOODS AND FORGED IRONS

"The Best Kind"

HAYES MFG. CO.

750 Bellevue Ave. Detroit, Mich.

1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

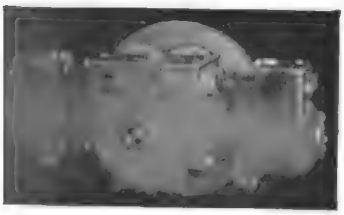
Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.
AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

HAVE YOU BEEN THE NEW

KOKOMO

MECHANICALLY - ATTACHED

AUTOMOBILE TIRE?

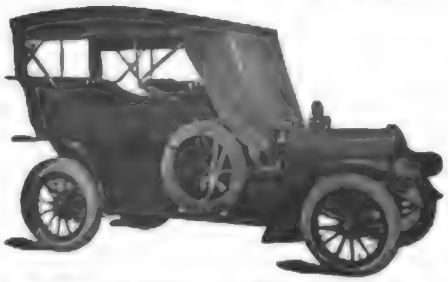
It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

Digitized by Google

CATALOGUE ON REQUEST

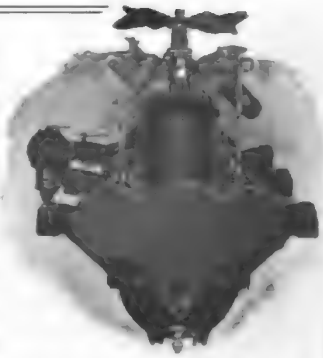


APPERSON BROS., KOKOMO INDIANA

Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3"x3½", in., 12-14 B. H. P.
Water cooled, 4 cylinder, vertical, 3½x3½ in., 14-16 B. H. P.
Water cooled, 4 cylinder, vertical, 4x4½ in., 20-22 B. H. P.
Water cooled, 4 cylinder, vertical, 4½x5 in., 30-40 B. H. P.

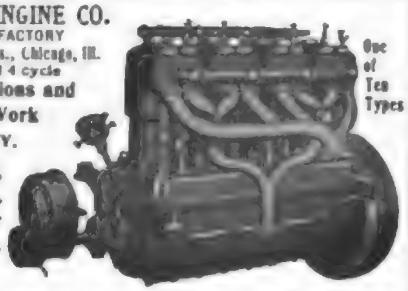


MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.

MOTORS — All Commercial Sizes

CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.

4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.



One of Ten Types

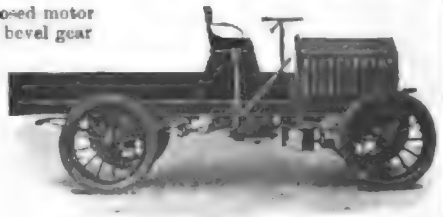
Telephone North 1607

VERTICAL AND HORIZONTAL

WOLVERINE F.

2-cylinder opposed motor under bonnet, bevel gear drive.

Price $1,200



Model "F" 18 h. p. Truck

Wolverine Automobile & Commercial Vehicle Co.
Dept. C. DUNDEE, MICH.

Veeder
ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

LATEST TYPE WILLARD LATEST TYPE
STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

Digitized by Google

Leather belts invite trouble

Something is always happening to them and putting the lubricating system or fan out of order,

TRADE MARK

Powco

Steel Belt

FOR OIL-PUMP OR FAN

is as pliable as leather, but stronger and more durable, and always works perfectly,

"Lasts as Long as the Car"

Your AUTO dealer should have it. If not, send us length of belt you are now using, name of car, and $3, and we will send you a POWCO BELT by return mail. Money back if not satisfactory. Write for Circular D.

Philadelphia Ornamental Wire Co.
628-630 Filbert St., Philadelphia

No. 66 Non-breakable Manganin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The powerful white light thrown out by

The Neverout

Mirror Lens Searchlight

puts all other light projectors in the shade.

The new *Neverout*

Patent Safety Gas Producer

helps to bring this about. It makes a pure, dry gas that gives a steady and intensely penetrating flame.

Economical, simple and no danger of explosion.

Write for free illustrated catalogue

ROSE MFG. CO.
912 Arch St., Philadelphia

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST.
NEW YORK CITY.

Baldwin Automobile Chains and Sprockets

Best Material

Accurate Construction

SEND FOR CATALOGUE

BALDWIN CHAINS AND SPROCKETS

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

K. Franklin Peterson, Western Sales Agent
166 Lake Street, Chicago, Ill.

STOP THAT NOISE!

NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

LET US HEAR FROM YOU.

THE NEW PROCESS RAW HIDE CO.
SYRACUSE, NEW YORK

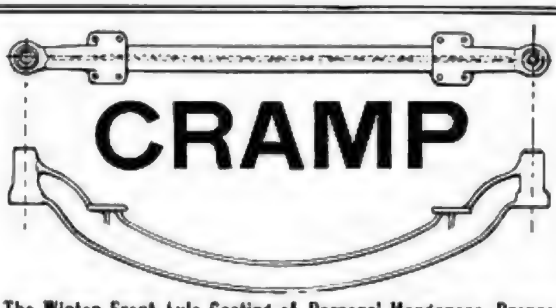
REPAIRMEN

Our Winter SNAPS LIST of Sacrifices is now ready and goods offered at sacrifice prices. Here are a few:

H. P. Mobile Steam Engines.
5 H. P. Prescott Steam Engines.
14 and 18-in. Copper Steam Boilers.
Cadillac Front Axles.
Bevel Differential Gears.
Copper Fuel and Water Tanks.
New Tubular Running Gears.

hundreds of other attractive lots of goods you need. Write us for SNAPS lists.

Weustadt Auto & Supply Co.
1828-830 South 18th Street, ST. LOUIS, MO.



CRAMP

The Winton Front Axle Casting of Parsons' Manganese Bronze
Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp & Sons Ship & Engine Building Company
PHILADELPHIA, PENNA.

Digitized by Google

Bausch & Lomb

MANGIN

Search Light

Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.

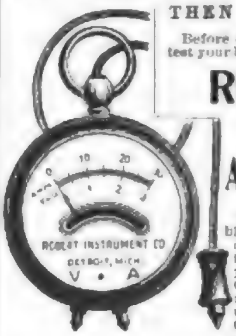
Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.

ROCHESTER, N. Y. NEW YORK, CHICAGO.
BOSTON, SAN FRANCISCO, FRANKFURT, A/m Germany.

BE SURE YOU'RE RIGHT
THEN GO AHEAD

Before starting on a trip test your batteries with the

ROBERT VOLT-AMMETER



There's no possible need for worry or anxiety after the "Robert" says your batteries are O. K. Every automobilist or engine user should use the Robert Volt-Ammeter.. It is

Invaluable for Testing Batteries

Responds accurately and instantaneously. Is convenient (pocket size). Contains no intricate mechanism. Will last indefinitely.

No Inconvenience. No Disappointment. Guaranteed.

PRICE (including Leather Case) $6.
(6-) volts—0-30 amperes) (0-6 volts—0-30 amperes)

Write for circular and discounts

ROBERT INSTRUMENT CO.
58 Shelby Street, : : DETROIT, MICH.

REST YOUR TIRES with the "Springfield" Auto Lift

Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DAY & CO., Pacific Coast Agents, San Francisco

THE SHAWVER CO., Springfield, O.

EVERYTHING FOR

Man, Motor and "Mechanician"

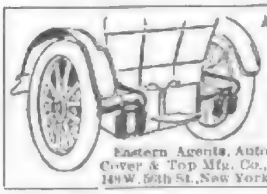
Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS

ST. LOUIS, MO.

ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas



Absorbs all vibration

The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.

Eastern Agents, Auto Cover & Top Mfg. Co., 149W. 58th St., New York

E. F. LESTER, Mf'r.

ALUMINUM
ARROW BRAND
SOLDER AND FLUX

FAYETTEVILLE, N. Y.

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

THE U. S. JACK
WITH UNIVERSAL HEAD
LIFTS ANY WEIGHT CAR UP TO 6000 Lbs

A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 51-4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

U. S. JACK CO., 352 S. Claremont Av. Chicago

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, Pa.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 250 North Broad St.
New York, 43th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 33 South Raymond Ave.
Minneapolis, 3d Ave. So. & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 5506 Centre Ave.
Rochester, 180 South Ave.
Portland, Ore., 140 6th St., N.
Cleveland, 404 Huron St.
Detroit, 255 Jefferson Ave.
Chicago, 201 East Lake St.
Buffalo, 649 Main St.
Boston, 39 Stanhope St.
Savannah, 309 Bull St.
St. Louis, 3944 Olive St.
Denver, 1443 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada.

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.

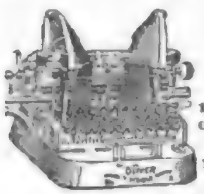
We Want Agents

for the

OLIVER Typewriter

—the standard visible writer—

cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. **We seek to make it worth while good men to remain with us permanently.** Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are looking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

160-900 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office
75 Queen Victoria St., London, England.

"SOLDERENE"

new rapid flux and tin combined for mending soldering all metals without the use of the solder, ering iron, acids, etc., by simply heating the ar- and applying Solderene. A stick should be in y Repair Kit.

ple 10c. **Dealers Write for Price.**

CHAS. A. THOMPSON CO.
Cortlandt Street New York City

WELCH

1906 LIMOUSINE CAR 1906

FOR

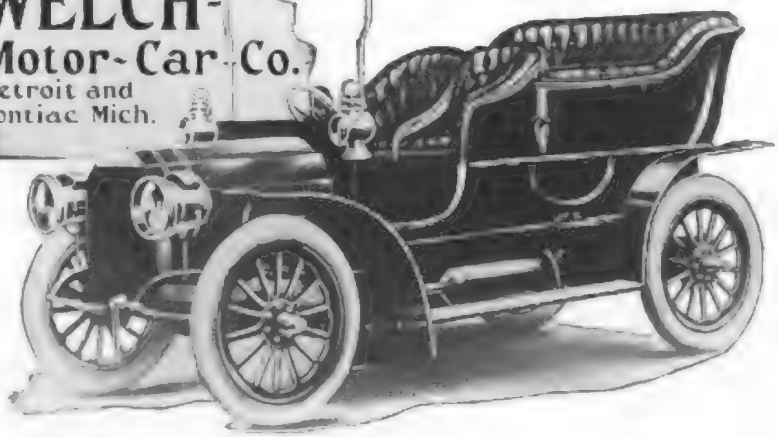
FALL AND WINTER USE

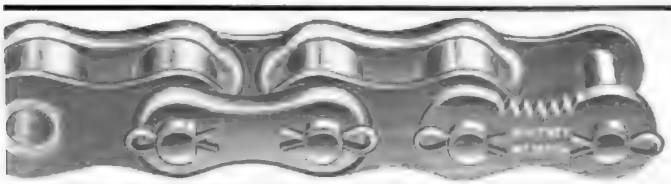
PRACTICALLY IMMEDIATE DELIVERIES

¶ Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS. ¶ Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. ¶ 4 to 50 miles on direct drive.

So simple a child can operate.

WELCH-Motor-Car Co.
Detroit and Pontiac Mich.





"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

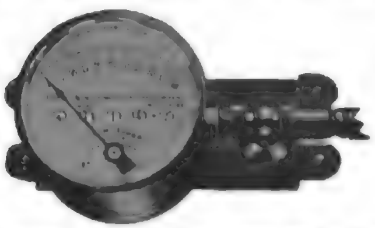
¶ The Automobilist who today doesn't include a Jones Speedometer in his list of accessories is eliminating two thirds of the pleasure of automobiling—and is encouraging the officer of the law to make his arrest.

¶ When the Judge says: "Did you have any *positive* means of determining the speed at which you were traveling?"—he is asking if your car was equipped with a Jones Speedometer. Don't forget that!

¶ The Mounted Officer with his primitive stop-watch method of timing the Automobilist can seldom make a case. Guess work testimony doesn't go in court. The Officer means well, but his method is wrong.

¶ Our Speedometer Bulletin contains speed information and tells of our Protection Tag. Free on application.

JONES SPEEDOMETER
122 West 32d Street, - NEW YORK



Standard Roller Bearing Co.
STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles
Send for Catalogue. PHILADELPHIA

PACKARD ENAMELED IGNITION CABLES
NEVER DISAPPOINT
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?
PROOF AGAINST HEAT, GREASE, OILS and WATER
THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

Of course if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
THE LEWIS & MATTHEWS CO.
Foreign and Domestic Cars — Automobile Selling Agts. 66, 68, 70 Stanhope St. Cable Address: "Autohead" — Garage Supplies Repairs Used Cars
Telephone Tremont 711 — Boston, Mass., June 23, 1905

Herz & Company, 187 Elm St., New York, N. Y.:
Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.
Very truly yours, THE LEWIS & MATTHEWS CO., Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth.
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

Force Feed Lubrication
Constant Sight Feed. No Liquids

McCord & Co., 1402-80 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

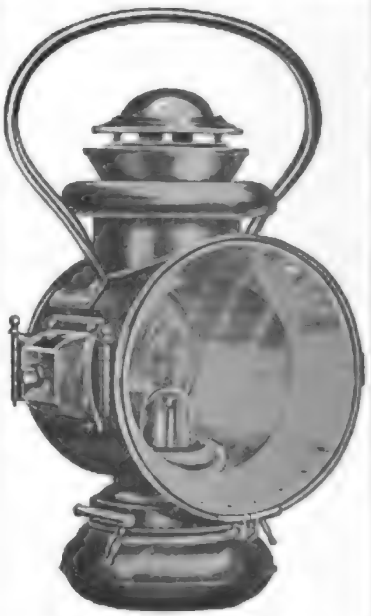
Automobile Fluids

NON-FREEZING FLUID—Guaranteed. Thin as water. Cools as well as water. Circulates as well as water. Freezes at 36 below zero. No acid. Won't corrode or damage system in any way more than water.
RUBBER FLUID—Small Tube, 25c. ¼ pt., 75c. Guaranteed quicker and better than vulcanizing. Repairs casings as well as tubes. Hot roads won't affect patches. Don't throw away old casings when we furnish the canvas and fluid rubber.
BODY FLUID—Feeds the varnish, don't deaden it. Removes all scratches. Easily applied and makes body look like new. Special prices to dealers.
MARION FLUID CO., First & Adams Sts., Marion, Ind.

VALVELESS-PUMPS
WITHOUT STUFFING BOXES OR SPRINGS
All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue
Madison-Kipp Lubricator Co., Madison, Wis.

WATER WON'T FREEZE IN YOUR AUTO IF YOU USE
RHODES CALCIUM CHLORIDE
10 pounds 10c lb. / 50 pounds 6c lb. / 100 pounds 5c lb. — Packed solid in cases. Shipped from New York or Chicago
RHODES CALCIUM CHLORIDE
WILL NOT freeze above 27 degrees below zero, rust or affect engine in any way, evaporate or precipitate under any conditions. Write us now.
JAMES H. RHODES & CO., 117 E. Kinzie St., CHICAGO

Electric Signs
Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.
U. S. ELECTRIC SIGN CO., Muncie, Ind.



THE HAM GOLD BLAST AUTO LAMPS
"THE LAMPS THAT LIGHT THE ROAD"

MR. MANUFACTURER:
Don't close your lamp contract for 1906 until you look over our line. We have no competition in light giving and burning qualities, and our lamps will surely interest you.

MR. DEALER:
Isn't it worth something to sell your customers lamps that will not only satisfy them, but will bring them back to tell you what a fine light they give, how steadily they burn in the strongest winds and over the roughest roads, and what a good fellow you are for selling them good lamps. They'll tell their friends about it, too.

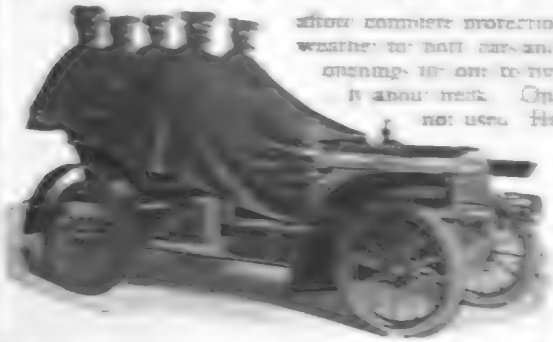
MR. AUTOMOBILIST:
Are you discouraged with the oil lamp proposition? If you are, we know you haven't tried the

HAM COLD BLAST AUTO LAMPS
because they are a delight to the most critical. They are strongly built, handsome in appearance, give a powerful light, and are always reliable, as they are wind proof and will not jar out. Never smoke, consequently the interior is always bright and clear, and there is no odor.

WRITE FOR BOOKLET
C. T. HAM MFG. CO.
ROCHESTER, N. Y.

Digitized by Google

AVALON STORM APRONS



Your $5.00 Back

SKINNER COMPOUND

$5 Express Prepaid

SKINNER & SKINNER MFG.

THE SOLVAY PROCESS COMPANY'S "KAL-KRYSTAL"

CARBONDALE CHEMICAL CO.

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

NEWMASTIC TIRE CO.

FOR AUTOMOBILE

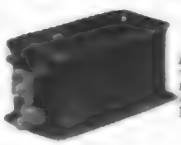
USED BY THE LARGEST MANUFACTURERS

HARRIS OIL

A. W. HARRIS OIL CO.

LUBRICATION

SPRINGFIELD TOPS



JUMP SPARK COILS

A Glance Tells You

That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.

SPICER UNIVERSAL JOINT MFG. CO.

PLAINFIELD, N. J.

Garlick Auto Props

CUSHIONED TOPS

GARLICK AUTO PROP CO.

We make Tops and Cushions and return Automobiles throughout. Also do Painting of the highest class. Prices reasonable for the work. There is economy and satisfaction in having such work done outside of the city.

W. S. FRAZIER & CO., Aurora, Ill.

Chicago Office, 871 Wabash Ave.

SPIRAL TUBING RADIATORS

HOODS ANY STYLE OR SIZE

LONG MFG. CO.

381-3-5 Wabash Ave. CHICAGO

READ MOTOR AGE ... $2.00 per Year

Digitized by Google

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

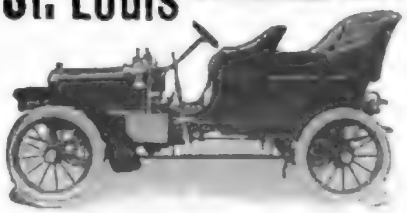
Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

Voltage—4, 6 and 8
Capacity—
20 Amp.—Hours
Prices—$6, $9, $12
Other styles—
$3.25 to $32.00.
Established 1890.
Catalogues on Request.

AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

St. Louis 18-22 30-34 Actual H.P.



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.

PROSPECT HEIGHTS PEORIA, ILL.

Rajah SPARK PLUGS

The Most Reliable IGNITION ABSOLUTELY SURE

Price, Postpaid $2.00

RAJAH AUTO SUPPLY CO., 140 Washington Street New York

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

Berkshire Cars

Four-Cylinder Water-Cooled

Model A, 18 H. P., : : : $2.000
Model B, 30 H. P., : : : 2.500

Detachable Tonneau, Side Entrance

Write for Catalogue.

Berkshire Automobile Co.
Pittsfield, Mass.

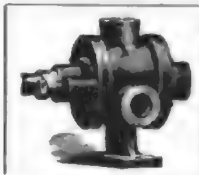
The IGNITION PROBLEM is SOLVED

In the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.
No BATTERIES. No COIL. No COMMUTATOR.
Everything for Electrical Ignition.
LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N.Y.

GRAY & DAVIS HIGH GRADE LAMPS

AMESBURY, MASS.



LOBEE ROTARY PUMP

4000 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 240 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York, A. L. Dyke Auto Supply Co., 4763 Olive St., St. Louis, Mo.

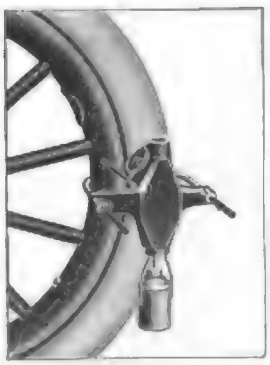
Graphite for the Motor

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.
Jersey City, N. J.



ANYBODY CAN USE IT

Blowouts, sandboils, glass cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co.
Topeka, Kan., U. S. A.

GOOD TOPS

We make them. LONDON tops fit any car. GUARANTEED all styles. Prices, samples and description of construction mailed on request.

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

MOTOR CAR SPECIALTIES and SUNDRIES

WE SELL EVERYTHING
WRITE FOR CATALOG

THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.
New Haven, Conn.

SPROCKETS

Chains and Differentials

CULLMAN WHEEL CO.
1021 DUNNING STREET CHICAGO, ILL.

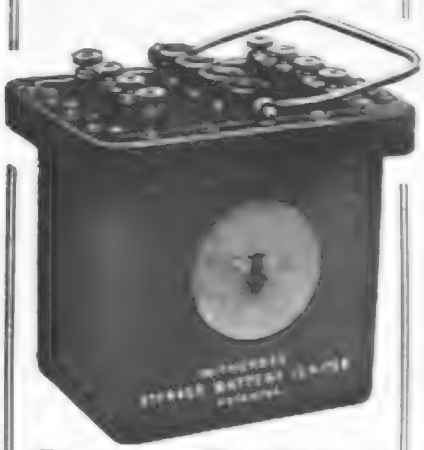
Special Design Finest Quality Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

WITHERBEE



Storage Batteries

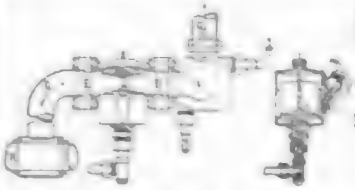
are used and endorsed by forty-two of the leading automobile manufacturers.

Specify the WITHERBEE and avoid ignition trouble. Satisfaction guaranteed or purchase money refunded.

Sold by the leading jobbers. Write for descriptive pamphlet.

WITHERBEE IGNITER CO.

27 THAMES STREET NEW YORK



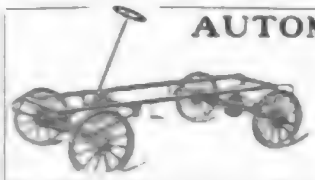
G. & A. CARBURETTORS

ARE GUARANTEED AUTOMATIC

By actual tests of the leading French makers. Float Feed Carburettor without complicated parts in many so-called "Automatic Carburettors" gives constant mixture at all speeds of motor.

FURTHER INFORMATION ON APPLICATION

ASTER CO., 1591 Broadway, New York



AUTOMOBILE RUNNING GEARS

WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO

SHELBY

SEAMLESS-STEEL-TUBING

BEST MADE FOR AUTOMOBILE CONSTRUCTION.

SEND SPECIFICATIONS

WE QUOTE PRICES

SHELBY STEEL TUBE CO.

PITTSBURG, PA.

BRANCH OFFICES—NEW YORK—CHICAGO.

Auto Top Bronzes

Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.

C. W. COOPS CO.

3 Appleton St., Boston, Mass.

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 60,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

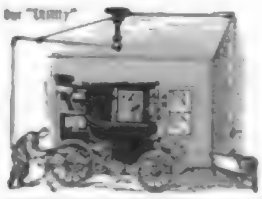
Subscribe for Motor Age

Two Dollars a Year

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES

HOFELLER BRASS FOUNDRY CO.

BUFFALO, N. Y.



Overhead Washing Machines

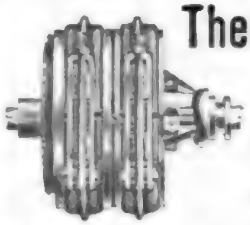
A Time, Labor and Money Saver.

For Public and Private Garages. No garage is complete without them.

Send for descriptive pamphlet and prices.

A NECESSITY TO EVERY AUTOMOBILE OWNER

THE H. NICKOLSBERG MFG. CO., 68 Dey Street, NEW YORK



The Ball Improved Transmission

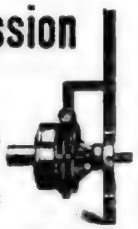
and REVERSE GEAR

— FOR —

Automobiles and Motor Boats

MADE ONLY OF SPUR GEARS

Patented April 9, 1901; Nov. 5, 1901; Jan. 12, 1904; Feb. 23, 1904.



NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.

Western Agents: J. H. Neustadt Co., St. Louis, Mo.

TOOLS for producing duplicate Metal Parts

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class and every effort will be made to give satisfactory service.

L. T. GAUSS, 222 Mill St., Rochester, N. Y.

DIES for blanking, forming and drawing

DRILL JIGS

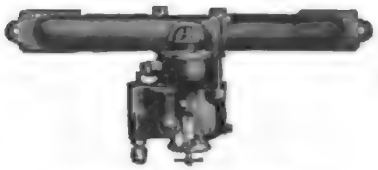
MILLING FIXTURES

VISE JAWS

SPECIAL CUTTERS, ETC.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00
Two-cylinder Queen	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E. Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD AND FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1297

1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1312 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042

1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—Moline 4-cyl. 20 h. p. side entrance, new $1250; Moline, 2-cyl. 12 h. p. side entrance, new, $800; Hoffman 10 h. p. tonneau, new $800; Murray runabout, $200; Oldsmobile, $250; Buckboard, $300; Gale, 8 h. p. new, $350; Winton, $300; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller" "Gale" and exclusive United States importers for the Benz, Mannheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1203-1205 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES

FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1328 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

PREMIER

FOR ILLINOIS AND IOWA

RALPH TEMPLE

309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO

PHILADELPHIA AUTO AGENCY

QUAKER CITY AUTOMOBILE CO.

128 to 146 North Broad St., PHILADELPHIA

OLDSMOBILE, FRANKLIN } Representing { WHITE, POPE-TOLEDO

The finest fireproof garage and the best equipped machine shop in the state. Tourists will find excellent storage and courteous attention.

ROCHESTER AUTO AGENCY

United States Automobile Co.

The largest garage and best equipped machine shop in New York State. Special attention given tourists night or day. Agents for

Thomas Flyer, Stevens-Duryea, Orient, Pierce-Arrow, Oldsmobile, Buick

---

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

POPE

-TOLEDO
-HARTFORD
-TRIBUNE
-WAVERLY

ORLANDO F. WEBER CO.

(INCORPORATED)

Distributors for CHICAGO and MILWAUKEE

1322-26 Michigan Ave. Phone 1099 South

321-25 Fourth St. Phone 2781 Main

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobiles. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog

S. F. BOWSER & CO., Inc., Ft Wayne, Ind.

CHAIN TOOL

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.

Old Colony Building : : Chicago

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 262 JACKSON BOULEVARD, CHICAGO

Eclipse Tops

Look Better
Wear Better
Made Better
Are Better

than any others. It's an old story with us. We have been making soop tops practically all our business lives

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF

AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

HIGH-GRADE

EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO.

Corner May and Commercial Streets, Dayton, Ohio

MAT'S BODY POLISH

Prevents the Finish from Cracking or Staining

Used by the Chicago Garages. Send for sample.

$2 PER GAL. **MAT. WEIS**

1412 Michigan Avenue, CHICAGO

CANDY CARBIDE

For FRENCH AUTO LAMPS (Immigration duty is paid)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.

105 WALKER STREET NEW YORK

NON-FLUID OILS

Are Oils with the "Drip" taken out - Not TALLOW GREASE. Please let that fact soak in and remember it all the right time. [illegible] "Compounds." "Non-Leaking Oils," or other substitutes. Count on having NON-FLUID OIL. Your dealer will supply it.

NEW YORK & NEW JERSEY LUBRICANT CO

14 Church St., N. Y. 70 Ninth St., San Francisco

WHY worry over a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber size of cut. It is mended as well as though the tire had never been cut. Plain rubber patches both round and oblong.

Established 1896.

CHAS. O. TINGLEY & COMPANY,

Rahway, New Jersey.

Beckley-Ralston Co. Chicago, Ill., Western Distrits. Phoenix Auto Supply Co., St. Louis, Southern Dist.

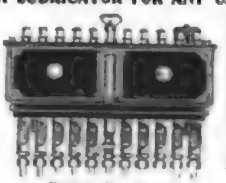
ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company

Pittsburgh, Pa.

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



Patent Pending.

An automatic pressure feed oiler instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

DEALERS

Do not buy spark plugs of half a dozen concerns. It isn't necessary

Condense Your Orders

thus obtaining lower prices, and use "Sta-Rite" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1906, price list.

The R. E. Hardy Co.

225 W. Broadway, N. Y.

No. 4, ½-in. Porcelain, $1.50 — P. J. DASEY, 432 Wabash Ave., Chicago — No. 34, ½-in. Mica, $1.75

The Spark of Motor Life

You know what happens when battery power stops and the spark fails. The Apple Automatic Battery Charger insures continuous sparks at all times. Write us at N. Y. and Chicago Auto Shows.

The Dayton Electrical Mfg. Company

75 Beaver Bldg. Dayton, Ohio

Every operator of an Automobile, Motor Cycle, or Launch should own one of our

AMERICAN POCKET AMMETERS

For testing dry cells. The only RELIABLE pocket ammeter on the market. Lasts a lifetime.

Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.

AMERICAN COIL COMPANY

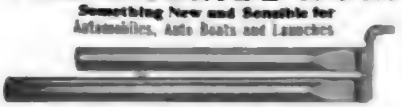
Foxboro, Mass.

Pacific Coast Branch, 88 McAllister St., San Francisco

A PLEASURE TO HEAR

THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.

970 Hamilton St., Dept. B, CLEVELAND

New York Branch, 148 West 36th St.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description

AUTO BRASS & ALUMINUM CO., Flint, Mich.

COOLERS FENDERS

HOODS TANKS

POCKET Battery Ammeter

0 to 30 Amperes

Indicates in any position and in either direction of current

In testing single cells, the cord is not necessary

Price $3.50

ELDREDGE ELECTRIC MANUFACTURING CO

Springfield, Mass.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the same time, same tools, same effort and one twist cleans the entire porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of the holder, and the gaskets of copper asbestos with it. No digging!

It is *asbested* inside and out. *Highly polished* and [illegible] between the [illegible] points and not between one point and the shell. Its points are protected.

Porcelains are kept forever and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of cheapness is left out of them.

Postpaid, Anywhere, $2.50. Booklet free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

Digitized by Google

See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

THE BILLINGS & SPENCER CO.
HARTFORD, CONN.

If You Are a Judge of Good Plugs

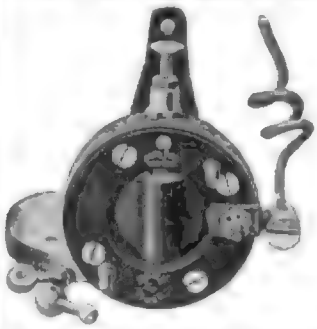
so much the better, but if you are not, it really does not matter, for you've only to try a "Never-Miss" to realize that

NEVER-MISS
Spark Plugs

are the perfection of ignition. Mica (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 2 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

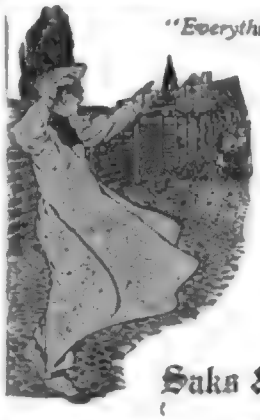
There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit any make of motor. State make of your motor when ordering.



HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

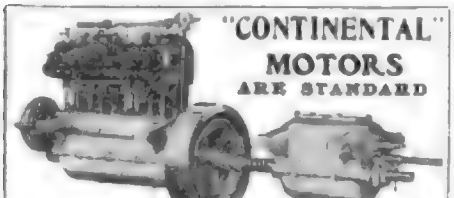
"Everything for the Autoist but the Auto"



THE NEW BOOK IS READY PLEASE SEND FOR IT

We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

Saks & Company Broadway, 32d to 34th Streets NEW YORK



"CONTINENTAL" MOTORS ARE STANDARD

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 40 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car.

HIGHEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE
AVOID INFERIOR IMITATIONS
ASK FOR CATALOGUE

Continental Motor Mfg. Co. 240-244 W. Lake St. CHICAGO

K. E. PETERSON, Direct Factory Representative

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

Motor Age
Subscription Price
$2.00 per Year
309 Michigan Avenue :: Chicago

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. C. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

WANTED—Party to take interest in good paying business; must be able to invest from $1,000 to $2,000; must be capable of doing office work. Address Ress & Co., top floor Pratt Block, Kalamazoo, Mich.

FOR SALE—Locomobile steamer, good running order, just overhauled; $100 takes it, or will trade for Olds runabout. Box 105, Braidwood, Ill.

Christmas Holiday Excursion Rates

Via the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, at a fare and a third for the round trip, with return limit of January 3, 1906. Through train service to New York City, Boston and other eastern points. No excess fare. Individual Club Meals served in Nickel Plate dining cars. Three through trains daily from La Salle and Van Buren St. Station, the only depot in Chicago on the Elevated Loop.

FOR SALE—1905 Model Royal tourist; new August 1st; run 1,500 miles; owner buying 1906 Model. Address L. B. K., care Motor Age.

FOR SALE—'03 Winton, fine condition, or exchange for property. Box 784, Cincinnati, O.

WANTED—Second-hand automobile; rent or purchase. E. H. Miller, 1438 South Penn Square, Philadelphia.

ORIENT BUCKBOARD, good as new, for $175. I. Hildebrand & Son, Codorus, Pa.

FOR SALE—1904 Pope-Hartford, 10 H. P., in first class condition; very cheap. Lewis H. Titus, Glen Cove, L. I.

FOR SALE—4½x4 opposed engine castings; complete, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, $75; cost $150. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

AUTOMOBILE—Cadillac, B model; good order; cheap. The Globe Chemical Co., Court and Deercreek, Cincinnati, Ohio.

CHAUFFEUR wants position with party touring during winter; best reference. H. F. Heath, 22 Bayne St., Buffalo, N. Y.

FOR SALE—Four Dunlop tires, 28x3, slightly used; complete with two extra tubes, $45; wonderful bargain; first check takes them. C. E. Hodges, Utica, N. Y.

VERTICAL PIERCE ENGINE, 8 H. P. carburetor, circulating pump, commutator, spark coil and hood, all for $100 if taken at once. Address J. H. Kindig, Huntington, Ind.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; brand new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

FOR SALE—12 H. P. horizontal opposed motor with transmission; Dow dash coil, Pittsfield timer, Kingston carburetor, six feed oiler, circulating pump, good condition; $100. Will sell all or part. Fred Matthiesen, Canton, Ill.

Digitized by Google

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas headlights, cape top, portfolio, extra tool boxes, complete tool equipment, including some specials, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make an offer. Box 71, care MOTOR AGE.

1903 Oldsmobile, with top; in good running order. Write for description and make me an offer. Address Shaw, 26 Goodrich St., Buffalo, N. Y.

CANADIAN HOLIDAY EXCURSIONS VIA THE WABASH

December 14, 15, 16 and 17 the Wabash will sell excursion tickets from Chicago to Canada at one fare for the round trip, good to return until January 6, 1906. Write for details. F. H. Tristram, A. G. P. A., 311 Marquette Bldg., Chicago, Ill.

TO TRADE—What have you to trade for a beautiful young trotting mare, fine rubber tire runabout and harness? A. T. Boylan, Denison, Ia.

SOME SHAKE-UPS in auto lamps, searchlights and generators; a few salesmen's samples at half cost to make. Miller Mfg. Co., Peekskill, N. Y.

FOR SALE—Packard model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,000 if taken at once. Bates-Odenbrett Auto Co., Milwaukee, Wis.

WILL TRADE quarter section smooth land in western Kansas wheat belt for automobile. F. L. Martin, Hutchinson, Kan.

FOR SALE—Olds runabout in good condition; consider no trade; a bargain at $275. R. M. Walker, Monroe City, Mo.

THE manager of foreign department of a prominent automobile factory is about to resign from his position on account of the firm having changed its foreign policy, and is prepared to negotiate for a new connection in the same or similar line.

This gentleman is recognized as one of the best authorities on export business in general and has all the qualifications of experience, foreign languages, energy, tact and influential connections abroad to guarantee his success.

To an enterprising automobile factory he would bring a specially valuable asset in the shape of his ability to give it an immediate footing in the foreign field with a list of about 1,000 trade correspondents and without the expense of preliminary work of organization and experiment.

Aside from the recommendations of his present employers he can furnish the best references and documentary proof of his abilities and past success. Address S. K., care MOTOR AGE.

1905 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror lens headlights and generator; baskets, autometer, electric light for gauges. Address Box 267, Portland, Me.

FOR SALE—8 H. P. Olds engine in runabout car. 2 new Morgan & Wright tires. $250. Box 143, Cayuga, Ind.

BARGAINS while they last. New 2 H. P. marine engine, $60; new 6 H. P. 2-cylinder marine engine, $165; new 4-cylinder marine engine, only $300; fully guaranteed. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago, Ill.

FOR SALE—Model A Winton; run 500 miles; fully equipped; bargain for quick sale. C. E. Wilkins, Omaha, Neb.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

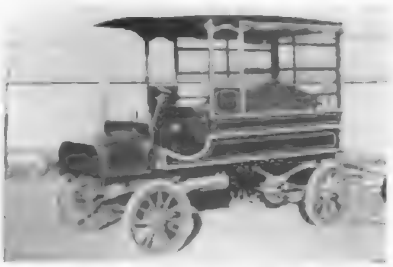
PACKARD, 15 H. P., automobile, $200; complete with all accessories, lamps, horn, extra tires; in first class running condition. A. J. Houle, South East St., Holyoke, Mass.

1903 Winton; completely overhauled; worn parts replaced; new paint; new 4½-inch rear tires; side baskets, etc.; $650. L., care MOTOR AGE.

That Car of Quality

The Logan

LIGHT DELIVERY CAR



TWO CYLINDER OPPOSED
SLIDING GEAR TRANSMISSION
AIR COOLED CHAIN DRIVE

Fulfills a need felt by merchants in all lines of business for a light commercial vehicle that will carry 1,500 lbs. at a good speed.

¶ Double the service of a horse delivery.

¶ Furnished with truck bed or closed body with detachable top.

¶ Write for Catalogue A 11-5 giving further description and prices of this and rest of Logan 1906 line.

The Logan Construction Co. ... ... Chillicothe, Ohio

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—Detachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

1906 Olds, Model B; curve dash; blue and yellow; used but little. M., care MOTOR AGE.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—1905, 30-35 H. P. Locomobile; perfect condition; satisfactory demonstration; owner had also 1904 Locomobile; has ordered 1906 car; write us. Capen Motor Car Co., St. Louis, Mo.

1905 Model B Pope-Hartford; new; never used; $500. N., care MOTOR AGE.

FOR SALE—Cadillac, 1904 Model "A" tonneau; newly painted; guarantee good condition. Capen Motor Car Co., St. Louis, Mo.

WE HAVE a brand new Baker Imperial and a Baker Stanhope, slightly used for demonstrating. We are not going to handle electric cars the coming season and will sell these at less than cost. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

RAMBLER—Model H, purchased in March; car is in good running order; has had good care; tires new or retreaded except one; three extra inner tubes; 7-inch Solar searchlight and generator; set Weed's tire chains; Gilbert cover for two persons; two oil sidelights and tail light; pump, jack and tools; have hauled four people 150 miles per day in this car; reason for selling, want surrey Type 1, same make. Price for immediate sale, $550; will demonstrate at any time. E. B. Tucker, Mattoon, Ill.

PACKARD Model N, 1905, top, glass front, headlights. As good as new in every respect, $3,000. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

WHITE 1905 Model, slightly used for demonstrating, in first class condition, $1,500. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carburetors and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

1905 Model 6 C curve dash Olds; new paint and tires; just as good as new and looks it; top with it. K., care MOTOR AGE.

FOR SALE—One 40 H. P., 1905, up to date Thomas Flyer. Has had the best of care and is as good as new. Extension top, glass front, 6 fine lamps, including 3 in swivel searchlight. Prestolite tank and Jones speedometer. Speak quick. Barclay Auto Co., 248-50 Third Ave. S., Minneapolis, Minn.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Seven horsepower runabout, in perfect order; cheap. T. E. Luts, Galion, O.

Experienced Supt. and Factory Manager,

Nine years building successful cars; one, two and four cylinder; is open for engagement. Many of his innovations of the past are standard on cars of today.

Address, "ENERGY," Motor Age.

FAIR EXCHANGE

CASH for your Scrap AUTO and Carriage TIRES.

H. E. LAUN, 90 Metropolitan Block, Chicago

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new; $4.75 each. Cash with order.

HOLLEY BROS. CO.

661-673 Beaubien St. DETROIT, MICH.

Wanted Names of Automobile Owners that would rather see their tires being pumped up than do the pumping. Our Tom Tire Pump fits on any Standard Machine and is worked by the motor, easily attached, well tested out, all enclosed and very satisfactory. Get acquainted with it. It is something that you will like. Agents wanted.

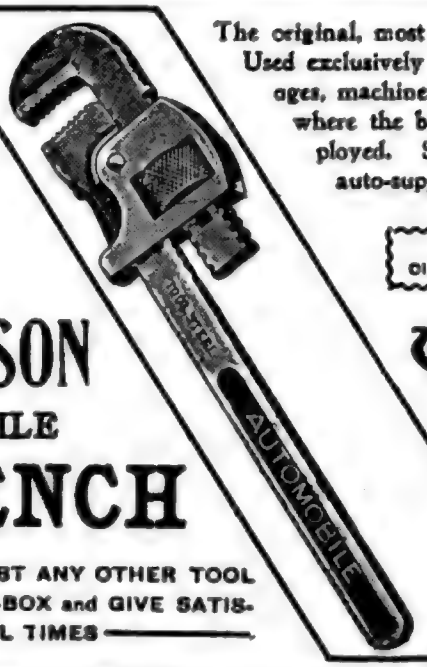
NYBERG AUTOMOBILE WORKS, CHICAGO, ILL.

Fully described in Horseless Age, Feb. 1; Automobile Review, Feb. 4.

Digitized by Google

When your Auto isn't just right, use the

STILLSON AUTOMOBILE WRENCH



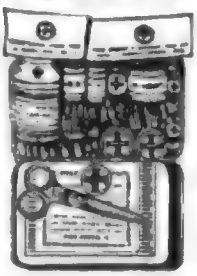
The original, most efficient and durable. Used exclusively in all up-to-date garages, machine shops and all places where the best mechanics are employed. Sold by all leading auto-supply jobbers and dealers.

WRITE FOR CIRCULAR AND PRICES

Walworth Mfg. Co.
Boston
Mass.
U. S. A.

IT WILL OUTLAST ANY OTHER TOOL IN YOUR TOOL-BOX and GIVE SATISFACTION AT ALL TIMES

Protection for Automobilists



Sixteen articles in a metal case for everybody who is liable to injury. Bandages, Dressings, Remedies. Quality Guaranteed. Send us your address and we will send the case; if you are satisfied after examination, send us one dollar; if not, return the case at our expense. Every automobilist ought to have one. Send for circular.

U. S. Emergency Case Co.
11, Beaver Bldg., Utica, N. Y.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

DIAMOND CHAINS

Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

LEA TIRE PUMP

You can pump without stopping for breath. Easy to work—pumps by a crank. Gauges the pressure—tires last longer.
Write for book B fully describing it and get our proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia
Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co.... 85
Adams Company 74
Adland Motor Co. 84
American Battery Co. 82
American Coil Co. 85
Apperson Bros. 76
Aster Company 83
Atwood Mfg. Co. 50
Austin Automobile Co 69
Auto Brass & Aluminum Co. 85
Auto Directories Co. 88
Automobile Equipment Co 82

Badger Brass Mfg. Co 34
Baker Motor Vehicle Co. 57
Baldwin Chain & Mfg. Co. 77
Ball-Fintze Co. 81
Bausch-Lomb Optical Co. 78
Beaver Mfg. Co. 74
Berkshire Automobile Co. 82
Billings & Spencer Co. 84
Blomstrom, C. H., Motor Co. 42
Borbein, H. F., & Co. 83
Boston Auto Gage Co. 82
Bowser, S. F., & Co. 85
Brennan Mfg. Co. 68
Briscoe Mfg. Co. 85
Brown, W. H. 70
Brown-Lipe Gear Co. 65
Buckeye Mfg. Co. 71
Buckeye Wheel Co. 77
Byrne-Kingston & Co. 58

Cadillac Co. of Illinois 84
Cadillac Motor Car Co. 53
Canedy, Earl 85
Carbondale Chemical Co 81
Champion, Albert, Co. 82
Coey, C. A., & Co. 84
Continental Caoutchouc Co 63
Continental Engine Co 76
Continental Motor Mfg. Co. 86
Coops, C. W., Co. 83
Corbin Motor Vehicle Co 49
Correspondence School of Automobile Engineering 71
Corwin Mfg. Co. 72
Cramp, Wm. & Sons, Ship & Engine Building Co. 77
Crawford Automobile Co 72
Cullman Wheel Co. 82
Daimler Mfg. Co. 59
Dayton Electrical Mfg. Co. 85
Dayton Motor Car Co. 75
Diamond Chain & Mfg. Co. 88
Diamond Rubber Co. 82
Diets, R. E., Co. 74
Dixon, Joseph, Crucible Co. 82
Dyke, A. L., Auto Supply Co. 78
E. H. V. Co. 62

Eclipse Buggy & Mfg. Co. 85
Edmunds-Jones Mfg. Co. 66
Eldredge Electric Mfg. Co. 85
Electric Storage Battery Co. 79
Electric Vehicle Co. 75
Elmore Mfg. Co. 69
Excelsior Supply Co. 84

Fairmount Engineering Works.... 84
Firestone Tire & Rubber Co. 57
Fisk Rubber Co. 50
Ford Motor Co. 47
Franklin, H. H., Mfg. Co. 33
Frazier, W. S., & Co. 81

G. & J. Tire Co. 60
Gabriel Horn & Mfg. Co. 85
Garford Company 51
Garlick Auto Prop Co. 81
Gaum, L. T. 83
Gilbert Mfg. Co. 82
Gilbern Bros. Co. 84
Goodrich, B. F., Co. 52
Goodyear Tire & Rubber Co 62
Gray & Davis 82

Ham, C. T., Mfg. Co. 80
Hardy, R. E., Co. 85
Harris, A. W., Oil Co. 81
Hartford Rubber Works Co. 58
Hartford Suspension Co. 82
Hayes Mfg. Co. 75
Haynes Automobile Co. 64
Herz & Co. 80-86
Hoefler Brass Foundry Co. 83
Hoffheimer Soap Co. 74
Holley Bros. Co. 84
Hyatt Roller Bearing Co. 88

Imperial Brass Mfg. Co. 73
Importers Co. 84

Jackson Automobile Co. 65
Jeffery, T. B., & Co. ..... Cover
Jones Speedometer 60

Kilgore Auto Air Cushion Co. 71
Kimball, C. P., Co. 82
Kirchberger, M., & Co. 60
Knoblock-Heideman Mfg. Co 81
Knox Automobile Co. 67
Kokomo Rubber Co. 75

Leather Tire Goods Co. 63
Lester, E. F. 78
Light Mfg. & Foundry Co. 73
Link-Belt Machinery Co 59
Lloyd Iron Roofing & Paint Co. 70
Lobee Pump Co. 82
Locomobile Co. of America 45
Logan Construction Co. 87
London Auto Supply Co. 82
Long Mfg. Co. 81

McCord Co. 80
McDuffee Automobile Co. 84
Madison-Kipp Lubricator Co. 80
Marion Fluid Co. 80
Marion Motor Car Co. 46
Matheson Motor Car Co. 72
Mead Motor Co. 84
Merkel Motor Co. 76
Meegar, C. A. 69
Michelin Tire, American Agency.. 54
Miller, Charles R. 69
Miller Signal Co. 85
Milwaukee Steel Foundry Co. 86
Mitchell Motor Car Co. 44
Moline Automobile Co. 68
Morgan & Wright ..... Cover
Motor Car Equipment Co. 76
Motor Car Specialty Co. 88
Motor Car Supply Co. 85
Mutty, L. J., Co. 85
Myers-Dayton Top Co. 85

National Motor Vehicle Co. 54
National Spring & Wire Co. 83
Neustadt Auto & Supply Co. 77
Never-Miss Spark Plug Co. 80
Newmastic Tire Co. 84
New Process Rawhide Co. 77
N. Y. & N. J. Lubricant Co. 85
New York Gear Works 83
Nickolsberg, H., Mfg. Co. 83
Nordyke-Marmon Co. 67
Nyberg Automobile Co. 87

Olds Motor Works 39
Oliver Typewriter Co. 79
Owen Chemical Co. 60

Packard Electric Co. 80
Packard Motor Car Co. ..... Cover
Pardee Ullmann Co. 84
Pedersen, J. T. 85
Pennsylvania Railway 61
Pennsylvania Rubber Co. 56
Philadelphia Ornamental Wire Co. 77
Pierce, Geo. N., Co. ..... Cover
Pittsburg Reduction Co. 85
Pittsfield Spark Coil Co. 67
Pope Mfg. Co. 61
Post & Lester Co. 53
Premier Motor Mfg. Co 64
Prest-O-Lite Co. 71

Quaker City Automobile Co 81

Railway Appliances Co. 85
Rainier Co. 58
Rajah Auto Supply Co. 82
Reo Motor Car Co. 43
Rhodes, J. H., & Co. 80
Robert Instrument Co. 78
Rose Mfg. Co. 77

Royal Battery Co. 60
Royal Motor Car Co. 60
Rubay, Leon 82
Rubber Goods Repair Co. 84

Rushmore Dynamo Works 82
St. Louis Motor Car Co. 82
Saks & Co. 86
Schrader's A., Son 74
Shawyer Co. 77
Shelby Steel Tube Co. 87
Skinner & Skinner 81
Smith, A. O., Co. 72
Spicer Universal Joint Co. 61
Splitdorf, C. F. 73
Springfield Metal Body Co. 81
Standard Roller Bearing Co. 80
Steel Ball Co. 72
Stevens, J., Arms & Tool Co. 57
Stitch-in-Time Vulcanizer Co. 82
Stolp Mfg. Co. 76
Strelt, A., Machine Co. 75
Supplementary Spiral Spring Co. 78
Swinehart Clincher Tire & Rubber Co. 73
Syracuse Aluminum & Bronze Co. 78

Temple, Ralph 84
Thomas, E. R., Motor Co. 48
Thompson, Chas. A., Co. 79
Timken Roller Bearing Co. ..... Cover
Tingley, Chas. O., & Company 85
Trebert Gas Engine Co. 70

United States Automobile Co. 80
U. S. Electric Sign Co. 80
U. S. Emergency Case Co 88
U. S. Jack Co. 78

Veeder Mfg. Co. 76

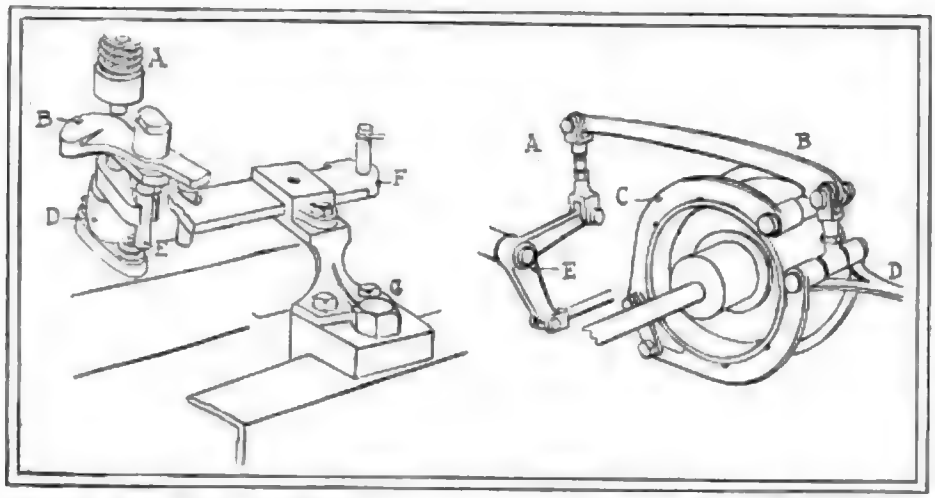
Walworth Mfg. Co. 88
Warner Instrument Co. 70-73
Way Muffler Co. 86
Wayne Automobile Co. 40-41
Weber, O. F., Co. 84
Weed Chain Tire Grip Co. 77
Weiss, Mat 85
Welch Motor Car Co. 70
Western Tool Works 69
Wheeler & Schebler, Mfrs. 85
White Sewing Machine Co. 85
Whitlock Coil Pipe Co. 60
Whitney Mfg. Co. 70
Willard Storage Battery Co. 76
Willis, E. J., Co. 83
Winton Motor Carriage Co. 52
Wilbertine Igniter Co. 63
Wolverine Auto & Commercial Veh. Co. 78
Wray Pump & Register Co. 67

Digitized by Google

MOTOR AGE

VOL. VII

NEW IDEAS GARNERED AT OLYMPIA SHOW



HORSICK INLET VALVE CONTROLLER

ENFIELD PROPELLER SHAFT BRAKE

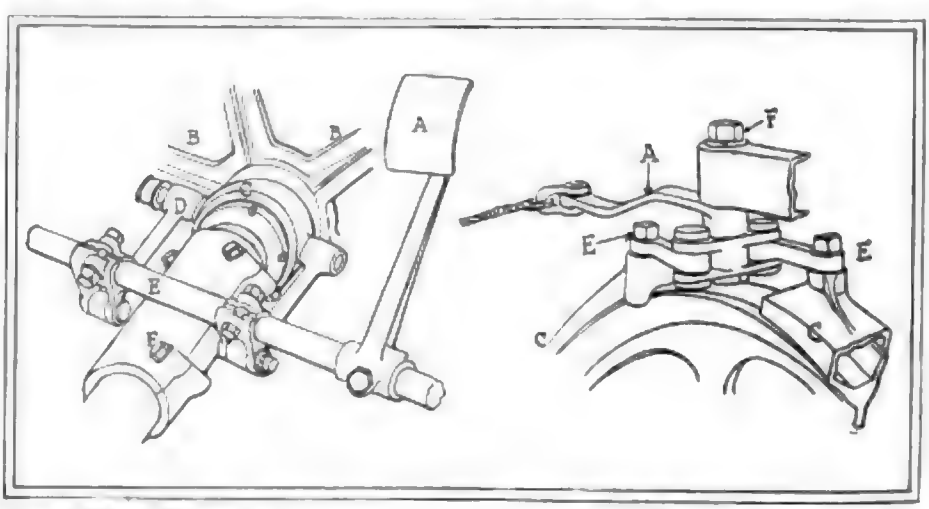
important feature of Olympia to everybody concerned—that is, the fall in prices. These, it may be pointed out, are not so general as it would appear on the face of matters. The majority of firms have not adopted what we may consider the more sensible form of giving improved construction and larger engine powers for the price charged last season, but those firms who have not or do not intend to make any serious alteration in their cars have come down generally to the extent of about 18 or 20 per cent. When firms like the Daimler and Panhard & Levassor do this, it is a lead that others will have extreme difficulty in refusing to take. Reputations to a large extent control prices, no matter what the particular developments in construction may effect. Smaller makers, however, have found it necessary to raise their prices. This has been no doubt the result of too sanguine reduction last year. The Coventry Humber car, which last year sold for $1,125, has been slightly increased in power for 1906 and now sells at $1,350, and similarly with many others.

Smokelessness and silence are two points which are usually dealt with together in discussing a motor car, although the matters with which they are connected and from which they arise are scarcely linked together. Smokelessness arises, as we all know, from excess of lubrication; noise may arise from insufficient muffling of the exhaust, worn car wheels, rattling chains or a too flimsy construction in frame work of the car. Since the emission of smoke is now an offense against traffic laws, the question of lubrication has been very thoroughly overhauled, especially in the larger cars. Heretofore the manufacturer of this type simply assured himself that he was sufficiently lubricating his engine and incidentally every other part as well, and the emission of smoke as a result did not concern him, and as a consequence some cars, and very high-priced ones, too, have been grave offenders in this form of nuisance, but reformation has come almost at a bound. In some, while still maintaining what is recognized as an excess of lubrication overflow, arrangements are provided by which this excess is taken away and returned, after being filtered, to the lubrication tank. By thus preserving the lubricant in the crank chamber at a constant and known level, the entrance of surplus oil into the cylinders is practically prevented. But as has been pointed out in a previous paragraph, on show matters, the automatic form of lubrication which became so universal last year was found to have its drawbacks quite apart from the matter of smoke creation. Consequently, there has been a distinct reversion to simpler forms requiring, it is true, more care and attention from the chauffeur, but nothing that might not be expected from a more general knowledge of the requirements and necessities of the modern motor car. This has enabled designers to clear away a large number of pipes which wandered through, as a rule, from the dashboard all over the engine and through the frame. In some cases, while a number of these lubrications leads are retained, provision is also made for hand lubrication. It is also noticeable that greater attention has been made to secure oil-retention in such parts as are usually described as oil-retaining. Consequently the cleanliness of the car has been greatly improved to the benefit of its owners and those friends whom he may visit and of the garages it may be stored in. Most of the pressure systems still rely upon the exhaust, but this will probably be dispensed with in the near future as it has been found, especially in small cars, to work its way into the lubricant and the lubricator glasses, thinning the oil and steaming the glasses. A positive pump with regulated flow is the proper system, it is contended.

In the matter of silence, the comparative abandonment of the chain drive is certainly the most outstanding feature. Chains, when even slightly worn, rattle, and cause an irritating vibration in small cars. In the larger vehicles, chain cases will be general, the chain being retained, principally because of the difficulty of conveying high powers through the central bevel drive. A more accurate conception of the functions of the silencer has also led to better designs in this part. The expansion chamber is not, as used to be the case, carried straight away to the back of the car, but is, generally speaking, placed as conveniently near to the exhaust ports as possible, and from there a tube of generous diameter conveys the expanded exhaust to the rear of the car. There is, it is claimed, an inertia in this method which helps to relieve back pressure in the cylinder as well as to secure the noiselessness so much desired. Providing a direct drive on the top of the gear is also a minor aid toward this, but in the properly designed car this is little more than a talking point for the salesmen's use.

In the matter of steering gear the chief effort has been directed toward providing adjustment for wear in the worm gear. In some of these great ingenuity has been displayed and there is no doubt that with ball-bearing steering the modern car is an easily controlled vehicle in comparison with the model of even a few years ago. In some cars a steering link connection has been brought behind the front axle in order to preserve it from injuries, as it is found that the front axle in this case serves the purpose of a guard. It is still evident that this is one of the weak parts of the car. Steering gear failures, especially in heavy or large vehicles, are too frequent and we may look for some very important improvements in this matter in the future as a result of the show.

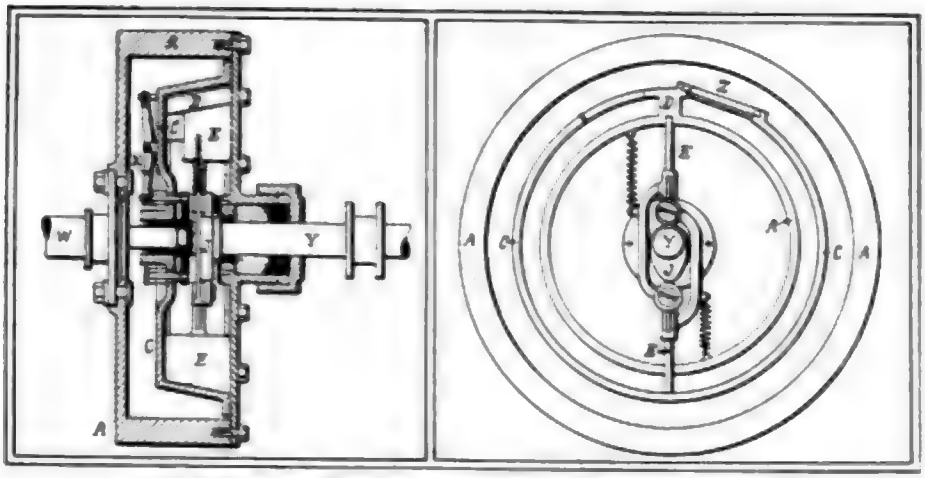
Ordinary high-tension ignition seems clearly destined to be superseded by the magneto. There is no doubt that the motorist desires to be independent in every possible way, and the magneto system naturally makes him independent of his accumulator-charging stand, but the whole matter is yet in a rather undecided condition, although some manufacturers brush



MINERVA CLUTCH MECHANISM

BRAKE ON THORNYCROFT CAR

Digitized by Google



CROSS SECTION AND PLAN OF SPARKS-BOOTHBY HYDRAULIC CLUTCH

it aside with the assumption that the high-tension magneto solves the situation. But there are some who still pin their faith to the low-tension system, and do not even attempt of a variation in the timing—the Arrol-Johnston, for instance. Still, the high-tension magneto is considerably the more popular and is to be seen on almost every car above $7,500 in price as a standard. It is usually provided with ordinary high-tension, either as a reserve or an alterative form of ignition. The single coil with high-tension distributor enables this to be done simply and neatly. Of high-tension magneto systems there are quite a number; notably the Bosse-Michel, Gianoli, Simms-Bosch, Rankin-Kennedy. Each has this point of novelty, each claims to be superior, but all seem to give equal satisfaction.

The inlet valve on the Horbick car is arranged with a swinging wedge-plate B, which passes under the valve stem A and is operated by a sliding bar F, controlled from the steering wheel. The wedge-plate swings upon a stud C, underneath which is a guide E. When the sliding bar F is moved it swings the wedge-plate under the valve stem and the valve cam tappet D strikes the wedge-plate, thereby raising the valve stem. The wedge-plate is held in place by a lever on the steering wheel and the thickness of the plate itself varies the lift of the valve. The entire mechanism is supported by a frame bracket G bolted to the motor.

A powerful brake is fitted to the gear shaft extension on the Royal Enfield. On the shaft is a heavy, wide-faced drum of generous diameter. The operating lever B is connected to the foot pedal by means of a rod and a bell crank E, so as to give it a downward pull. Between the bell crank and the lever is a turn-buckle A for taking up slack.

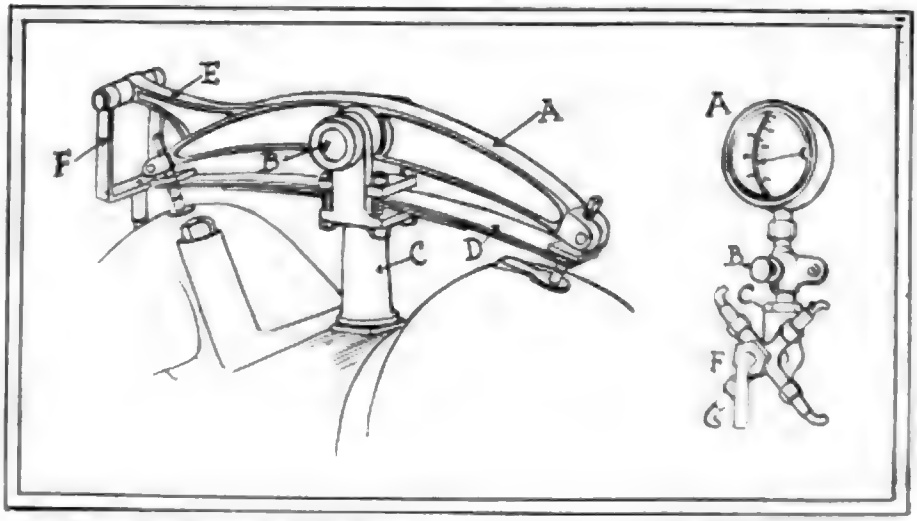
Decidedly novel is the clutch-operating scheme on the Minerva car. The pedal lever A is connected with the rocking shaft E in the usual manner, but the clutch collar C is moved by trunions D D, which are connected to clamps on the rocking shaft. The webs B of the flywheel are shown in the illustration. The clutch spring is covered by a housing F, which is held in place by four studs E.

On the Morgan car—a debutante in the hands of a big London coach-building house—is a novel clutch. It is the Sparks-Boothby. It is called a hydraulic clutch, but in reality it is an oil-power device, as oil substitutes water in its application to motor car construction. Like the disk types, it admits of careless use without injury, but it is neither as simple nor as cheap to construct. A circular cylinder or annulus is formed at the rim of the flywheel A, which is the driving member, and the pallets E, which fit this annular chamber and act as pistons, are really part of the driven member of the clutch C. A stop D forms a partition of the circular part of the annulus, and a valve Z is so constructed to allow the oil to circulate around the stop D, and is controlled by the movement of the clutch pedal. So, supposing the whole of the flywheel casing to be filled with oil, which would of course include the annulus, if the driving member A is rotated, the driven member C must also rotate, as the oil which fills the annulus cannot pass either the pallet E or the stop D and valve Z until the valve is opened by depressing the foot pedal. But upon the valve Z being opened the oil is allowed to freely circulate, and no power is transmitted. As the pallets E approach the stop D they are automatically and alternately removed by the cam J from the circular part of the annulus, thus avoiding collision with the stop D. A free clutch is assured by allowing the driven member C to be pushed out of contact with the driving member A by a further movement of the clutch pedal after the valve Z is fully opened. There are two types of this clutch. Type A has the valve which controls the amount of slip operated from the exterior of the flywheel face. In type B the valve is within the case, and is operated by the small lever X through the shaft Y being pushed towards the interior of the case by means of the clutch pedal. In either case when the valve Z is fully opened the inner member is pushed out of contact and allowed to run free. As the requisite amount of slip is determined by the orifice permitted at the valve Z through which the oil must pass, it is clear that slip can be allowed to any extent, as oil cannot be injured by simply being passed through an orifice.

A somewhat novel scheme is introduced in the 1906 Fiat for actuating valves. This is a tappet in the form of a walking beam A which is carried on a stud B supported by a standard C between two cylinders. Beneath the stud and over the main portion of the standard a flat four-leaved spring D is clamped, the ends coming in contact with adjusting screws in the end of the walking beam. On one end of the walking beam is a lug E, to which is attached a link F connecting the push rod.

The emergency brake on the Thorneycroft car is substantially and simply constructed. The ends of the band C are connected by links E to a cross arm made integral with the operating lever A, to which is attached the cable running to the hand lever on the side of the car. The cross arm turns on a stud F locked to the brake carrier.

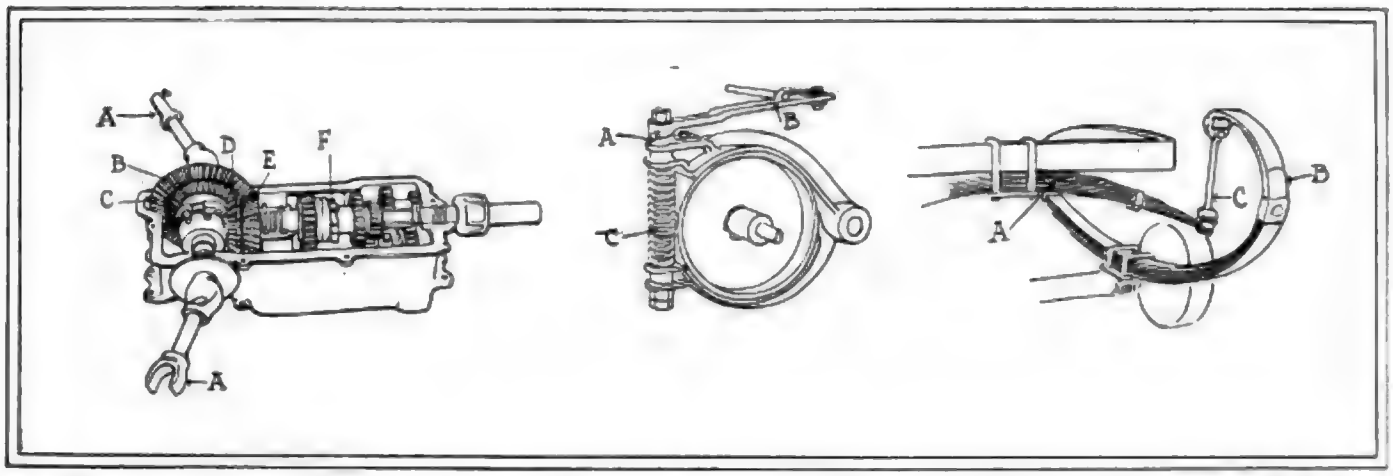
When an engine begins to lose power the difficulty of locating the fault is often so great that it is generally not attempted until the run is finished. The usual practice when a fault in the engine is suspected is to cut out one or more cylinders by preventing the ignition of the charge, and thus by a process of elimination to eventually arrive at the fact that a cylinder is either not working at all or is developing little power. The Gibson power indicator provides a handy means for reading the pressures developed by any particular cylinder while actually performing its work. The apparatus consists of a pressure gauge A, combined with a non-return valve D, a leak screw B, a drain cock E, and a cock F,



VALVE TAPPET AND SPRINGS ON FIAT MOTOR

GIBSON POWER INDICATOR

Digitized by Google

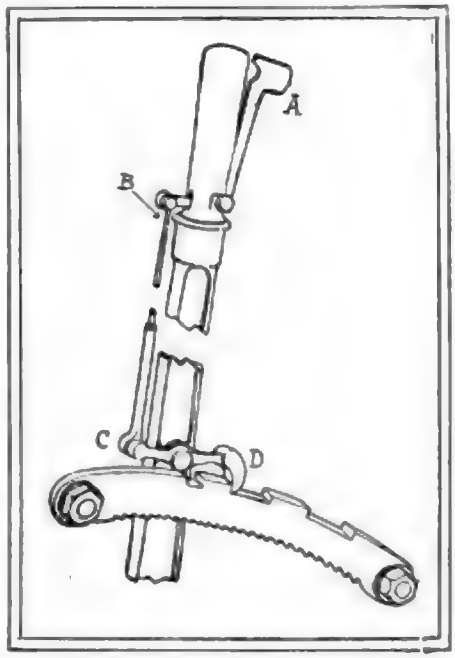


PILAIN GEAR AND DIFFERENTIAL — VAUXHALL BRAKE SCHEME — C SPRINGS ON C. G. V. CAR

with connections corresponding in number to the number of engine cylinders. A small bore copper tube is carried from the compression plug hole of each cylinder to one of these connections. If the cock F is turned so as to connect any one cylinder with the indicator, then any pressure produced in that cylinder will cause a small quantity of gas to register on the gauge, which registration remains. If the leak screw B is released further pressure developed within the cylinder will be reproduced on the gauge. If the ignition in any cylinder is not perfect the action of the finger will be erratic, rising a considerable distance and slowly returning to compression pressure, then again rising and so on, whereas if perfect the beat of the finger will be quite regular. If ignition does not occur at all the pressure registered by the finger will be that of compression only. If pre-ignition is occurring the pressure shown will be considerably higher than normal, accompanied by knocking. If the valves or piston rings are leaking the pressures developed will be regular, but not as high as usual. If the inlet valves are stuck shut the indication will be a very low pressure, less than normal compression. If the exhaust valve is stuck open the indicator will remain at zero.

One of the cars at Olympia which attracted considerable attention, particularly from colonial exporters and traders whose customers lie amongst the professional classes, was the Adams-Hewitt 9-10-horsepower car. This is regarded by some judges as being the most promising type of motor vehicle for our colonial markets, and for that reason may interest the American trade. To start with, it is clearly a copy of the American design which finds such popular utterance in the Cadillac and Oldsmobile cars. It is, however, distinctly of British manufacture. The works of the Adams-Hewitt Mfg. Co., which markets it, are at Bedford, about 40 miles north of London. The wheel base of the car is 6 feet 8 inches and the wheel gauge 4 feet 2 inches. The body springing plan is of the Cadillac design, but we here prefer to call it the Lanchester, since it was on that car the design was first exploited. The car body, engine, etc., are mounted on an ordinary channel steel frame, which in turn is mounted on longitudinal laminated springs running from axle to axle. The engine is a single cylinder horizontal, with a bore and stroke of 4¾ inches and 6 inches, with mechanically operated valves, situated on one side, both very accessible and each interchangeable with the other. The engine runs at 1,000 revolutions. Water cooling is positive gear pump with water tank containing sufficient capacity for a 60-mile run and radiator placed below the frame of car points, which seem to catch the colonial buyer, at least.

A very massive flywheel 22 inches in dinmeter is set at the right hand side of the crank chamber. To the right of it is the chain sprocket, which drives direct on to the differential gear on the back axle. A planetary two-speed gear is adopted and the operation of which is entirely controlled by pedals. In the planetary there are five gear wheels of external cut and always in mesh, the whole being enclosed in an oil-tight cast iron circular box of about 12 inches in diameter, 5 inches in width. The speed control is extremely simple. Three pedals are provided. Each pedal is connected with a brake drum on the planetary gear corresponding to the gear desired. By pressing one pedal forward, the first speed is obtained. By releasing that and pressing another the high speed is obtained. The third pedal acts as a brake up to a certain point—at which the car has come to rest—then the reverse gear is put into operation by further pressure on the pedal.



DE DION LEVER AND QUADRANT

One of the most inspected cars was the Pilain, in which several novel ideas were disclosed. The engine of 20 horsepower had a power transmission to the driving wheels similar to that which has been in use on the smallest of the de Dion cars. A countershaft with universal joints formed with the differential gear conveys power from the gear box to internally toothed pinions fixed to the hubs of the driving wheels, the car itself having two solid axles. This transmission is not quite a novelty, although its application to an engine of such power constitutes a radical departure, but it is in the gear box which the most remarkable portion of the Pilain is to be found. In this a direct drive is provided on second and third speeds, the latter being the top speed. This is secured by mounting two concentric bevel pinions C and B on the differential bevel pinions D and E, the gear shaft running on ball bearings. The operation of these is very ingenious and apparently substantially worked out. One of the parallel bevel pinions D takes up the drive for the top speed and the other E takes up the drive for the second speed, the sliding speed pinion having two dog clutches, one on its forward face and the other on its outside circumference. When the third speed pinions are in engagement the outer dog clutch engages with the shaft of the forward of the two bevel pinions E, which transmits the drive through the larger of the two bevels B on the differential shaft. The same sliding pinion thrown further in disengages from the one bevel pinion, and the dog clutch on its face enters into and engages with the clutch on the rearmost bevel pinion D on the gear shaft, which has been up to this running idle. This now transmits the drive to the inner of the two concentric bevels C on the differential shaft, consequently the drive is again direct and at a higher rate of speed at the road wheels.

The new de Dion change speed lever motor is like no other on the market. The operating lever has a simple fore-and-aft motion, but it is provided with a trip action which makes very easy changes and prevents

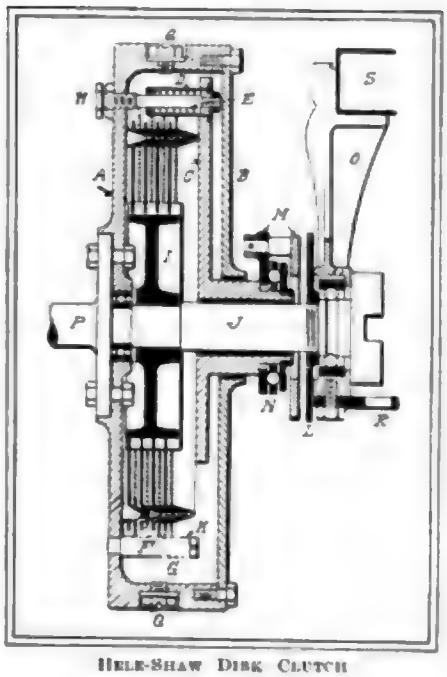
Digitized by Google

careless or maladroit handling. A spring hand grip lever A through the trip D prevents any change speed motion until it is forced by being pressed into the change speed lever handle. As soon as the trip is out of any of the notches the lever can be moved to the required gear notch in the quadrant. Q corresponds to the reverse gear. The N end of the next notch finds the gears out of engagement and to put in the first speed it is only necessary to pull forward the lever until the trip catches against the forward end of the notch. Similarly when in the third notch at the forward end the second gear is at work and when pulled back to the other end of the notch the high gear is in train.

A departure from ordinary methods in brake construction is found in the Vauxhall. The brake drum is attached to the countershaft in the usual manner and the bands are connected by means of a bolt C passing through the spring, which serves to spread the bands when not in action. One end of the bolt is made with a ratched-faced bearing A, with a corresponding section on the end of the brake lever B, which is connected with a rod running to the foot pedal. A slight movement of the pedal operating the lever brings the two ratchet-faced sections into action, which causes the brake bands to clamp over the drums.

As previously stated, there is some inclination to return to the use of C springs, particularly for continental use. A C. G. V. chassis is shown which has C springs and a transverse spring A supporting the frame of the car at the rear. The ends of the transverse spring and the ends of the C springs B are connected by a long rod C with double spring shackles and means for taking up any settlement in the springs themselves. This car is fitted with internal expanding brakes and the steering wheel is on the left side, with the controlling levers in the center of the driver's sent.

The flexible joint to fore-and-aft ends of the propeller shaft on the Legros & Knowles cars are novel. Fitting over square ends of the driving and driven shafts are two armed forgings, and set at right angles to them are bridge pieces bolted to the propeller shaft by flanged couplings. Between these forgings are introduced three spring steel plates and two cross coupling rods, secured together by rivets and grouped so that the first plate has two opposite corners fixed to the first forging and its other two corners to the first coupling rod. The second plate is similarly held to the front coupling rod and at its other opposing corners to the second coupling rod. The third plate is similarly disposed between the second coupling rod and the other forging. By this form of construction power can be transmitted through all three plates in sequence, each plate being free to bend to any torsional force. This freedom of motion in the three plates, alternating at right angles in each, provides the necessary universal motion. There is nothing but purely molecular friction engendered and so little of that that the life of the joint must be practically indefinite.

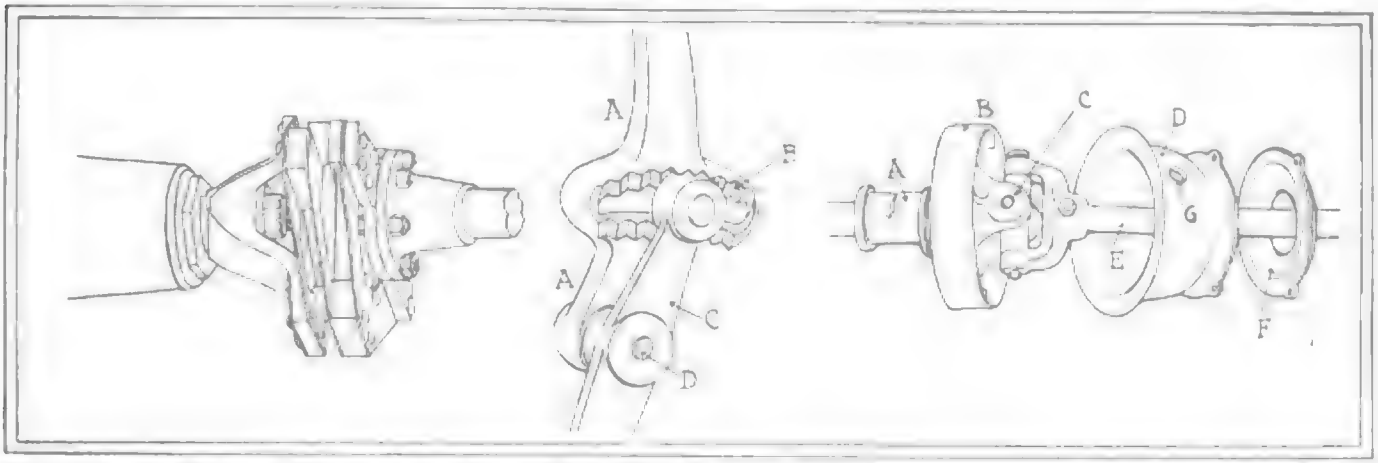


Hele-Shaw Disk Clutch

The Hele-Shaw clutch is the most popular form of disk clutch among British designers and is used by some continental motor car manufacturers as well. It consists of two series of thin steel plates of V-section, one-half being attached to the driver and the other half to the driven member of the clutch, the two series alternating. When frictional contact is established the whole revolves as one mass, transmitting the engine power to the gear shafts. The plates run in oil and the flexibility of the clutch—which permits of the most careless use without jar or strain on the gears—is due to the oil getting between the disks and having to be forced out before complete frictional contact can be established. In the illustration P is the end of the engine crankshaft, to which is bolted the flywheel A. A series of studs K in the wheel engage with notches in the set of plates F. These are in frictional contact with an alternate set G. Notches in these latter engage with projections on the wheel I, which is fixed to the driven shaft J. The sets of plates are kept in contact with each other by the springs E acting on the bearing plate C. The clutch is released by the push pedal acting through the ball race N, and so drawing out the plate C. Small bent springs arranged around the edges of the plates F help to free them from each other. When the clutch is fully released the disk L is brought into frictional contact with the surface of the part M, ensuring the quick stoppage of the shaft J should such be necessary. The springs E can be tightened, increasing the driving power of the clutch by drawing back the screws H, care being taken to do this equally all round.

On the Argyll car there is a somewhat novel scheme for adjusting the pedal levers used in operating the clutch and brakes. The lever A itself is made in two parts with a toothed sector B for adjusting the angle and length of the pedal push. The lower end of the combination C is held in place by a stud D, and a lock nut, which is loosened when adjustment is made by moving the loose end of the combination lever so that the teeth on the inner side thereof mesh with those in the sector. It is in a manner similar in operation to the link motion used in locomotives.

The Humber people have a neat way of protecting the universal joint on the propeller shaft of their Coventry car. The gear shaft is keyed to an extension in the form of a flange A, which connects with a large band-like piece B on the end of which is one section of the universal joint C. This large band is made for the purpose of carrying an aluminum cap D, which is bolted to it and covers the joint. The propeller shaft E projects through a large opening at the other end of the cover and over this is a plate F with a hole sufficiently large to permit the shaft to revolve. In the cover is a hole G so that the universal joint may be oiled.



Legros & Knowles Flexible Coupling — Argyll Pedal Lever Adjustment — Humber Universal Joint Cover

Digitized by Google

New York Office
29 West 42nd Street
London Office
American Publication
Bureau 55 Manor
Park Road Harlesden,
N.W.

MOTOR AGE

309 Michigan Avenue
CHICAGO

Published every Thursday by the Trade Press Co. N. H. Van Sicklen Manager. Telephone Harrison 4410

Member National Association of Automobile Manufacturers, Chicago Trade Press Association and Official Organ of the American Motor League

Subscription two dollars per year. Foreign subscription four dollars. The Western News Co. of Chicago and its branches supply newsdealers. Entered at the Chicago postoffice as second class matter

A SIMPLE REMEDY FOR MOTORPHOBIA

MOTOR AGE has repeatedly shown that motorphobia exists to an alarming extent in the city of Chicago; even the existence of the winter months has not altered matters to any appreciable extent. Supplementing the howl of press and public about excessive speed, a wise judge has informed a grand jury that a motorist responsible for the death of a pedestrian could be deemed guilty of manslaughter and has charged the jury to look into such cases.

This state of affairs has been brought about chiefly by the attitude of some of the daily papers, which have shown an unreasonable amount of bias, with extreme care taken in misstatement of facts in many cases. There are, and there always will be, careless and reckless motorists, but the person who walks the streets of Chicago cannot be impressed with the idea that automobilists in general are in any manner guilty of heedlessness, recklessness or carelessness.

The biased impressions that exist in Chicago and elsewhere have been allowed to grow because of a lack on the part of the automobilists and automobile clubs in making effort to counteract these impressions. There is much that could be done by automobilists to remove these impressions.

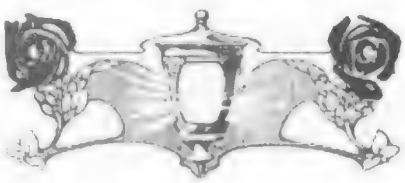
The papers of Chicago which howl the most are quite as guilty of infractions of the law as are some of the reckless automobilists of whom they complain. The American on Thanksgiving day employed a prominent retail automobile tradesman to use his fastest car to carry papers containing the result of the football game to Marshall field, some 7 miles away, before the crowd could leave the grounds. It is told that the automobile in the service of this member of the motorphobia press tore down Michigan avenue at such speed as to absolutely sweep the roadway free from dust. Another paper, the Chicago Tribune, the most rabid motorphobist of all, employs a chauffeur to drive a car in its own service. But it has never told to this day that its own chauffeur was arrested and fined for breaking the speed ordinance.

The papers that howl against the automobile have not vented their spite on the traction companies which permit their monster cars to run at frightful speeds over the public highways. They have not editorially complained about a car which, a week ago, while running over 20 miles an hour in the downtown district, crushed the life out of a woman. They have not editorially demanded that drivers of horse-drawn vehicles be licensed and their vehicles numbered and that they be compelled to keep awake while on their vehicles. They did not seriously complain when a hose cart loaded with firemen dashed into a farmer's rig while the farmer was asleep on his seat and the horse was taking its own course. There are other things they have not told, and while all this has been going on the motorists and those interested in the automobile trade have made no attempt to remedy matters or to change the impressions that are being formed in the minds of the people.

It may not be generally known that according to section 1443 of the municipal code of the city of Chicago "it is unlawful for any owner or driver of any automobile, truck, dray, cart, carriage, bicycle, motor cycle or other wheeled vehicle to use the streets of the city of Chicago without having displayed—until daybreak after the hour of 8 p. m. during the period commencing April 1 and ending October 31 and until daybreak after 6 p. m. during the period commencing March 1 and until March 31—one or more lights." Here is an ordinance that has never been enforced, except against automobiles, since the days of the popularity of cycling, notwithstanding the fact that it is positively dangerous to even operate an automobile on the public highways at night because of the absence of lights on other vehicles. The Chicago Automobile Club and the motorists have made no effort to secure the enforcement of this ordinance in full.

The motorphobia press has said nothing of the miserable streets that Chicago owns; it has said nothing about the lack of traffic regulations on the streets, but it has seemingly vented its spite upon the hundreds of automobilists who are innocent, as well as the few who are guilty. The Chicago Automobile Club is supposedly a representative affair. Since a year ago, when the attempt was made to secure the passage of a state law governing the use of automobiles, the organization has made little effort to provide anything that could be consistently construed as being beneficial to the automobile community.

Every case which has been before the courts has been defeated in some manner, chiefly on technical grounds, which would indicate either a lack of knowledge or a lack of study on the part of those handling the legal end, for the courts themselves have intimated that the laws and ordinances which now are supposed to regulate automobiles are more or less illegal and unconstitutional. It would seem to the ordinary mortal that an organization of motorists should, after its several defeats, begin to realize its own lack of ability and its own apparent self-satisfied position.



Would it not have been wise to have secured legal talent of great experience to cope with that which the great municipal corporation of Chicago naturally secures in cases of this kind? If motorists would even now make an effort to have the ordinance above referred to enforced much of the howl against automobiles would soon die away and there would be no need for a court to talk of manslaughter. Furthermore, automobiling would be considerably benefitted were this and other similar organizations to assert themselves to the extent of disciplining their own members, as they have promised and threatened to do many times.

In this connection it may be said that the retail tradesman guilty of sweeping the streets of Chicago for the benefit of a motorphobia press is a member of the Chicago Automobile Club and should be the first to feel the heavy hand of the organization if it is sincere in its efforts to suppress the heedless and the reckless. It cannot be supposed that a club would be guilty of overlooking such an act. A fine, even if the maximum, would be of no effect, simply because the amount of the fine probably would not anywhere nearly equal the amount paid for the use of the automobile on the occasion referred to. If the clubs can conscientiously permit members to violate laws in this manner, if they can conscientiously permit authorities to religiously rub it into automobilists, then these organizations are by no means representative and are not entitled to consideration on the part of the motorist.

An automobile club is not like the cycling club of old—it lacks competition. When cycling was in its infancy clubs were formed all over the country, the clubs banded together and when their rights were trampled on the clubs simply stood up and howled and demanded and then secured what they wanted. At times they were compelled to resort to mass meetings to help along the cause, but they got there. The automobile clubs might pattern after the cycling clubs of the '90s.

It will require a few years more of abuse to arouse motorists to the sense of duty they owe to themselves and to their neighbors. When they have been sufficiently abused and unjustly condemned they will wake up and attempt to change things that ought to be changed now. To wait is to permit dangerous precedents to be firmly established. There is a demand *now* for sharp and decisive action on the part of *every* motorist and *every* motoring organization. This must come soon and the sooner the better; it is imperative if motoring is to exist, if it is to be enjoyed, if it is to be brought successfully into the commercial field.

Digitized by Google

A Florida Enchantment is no longer a book—it is a reality.

⁂

What a business Aladdin could do if he were modernized enough to cry "new cars for old" instead of lamps!

⁂

One more combination of letters to struggle with—P. A. T. A., meaning the Philadelphia Automobile Trade Association.

⁂

New Jersey ditches are undoubtedly one step in advance of Chicago's bump the bumps, but they certainly make this twentieth century resemble in a way the days of the Spanish inquisition.

⁂

Scorching through the city streets to catch a crowd at a football game is fine business from the standpoint of enterprise, but hardly consistent with the editorial views of a daily newspaper, Mr. Hearst.

⁂

Instead of the "charger impatiently champing his bit" it is the motor car "throbbing like an ulcerated tooth," according to one English show writer. He must be the same chap who writes about "luridly leaping flames" in describing a fire in an American city.

⁂

General Greeley, chief of the United States signal service, is a convert to motoring. There should be no reason to complain of the weather from this time on, with such a distinguished ally on the automobilists' side. Glidden would better get the general to act as weathermaker for next year's tour when the weather is the chief consideration.

⁂

Out Chicago way they have discovered that all is not gold that glitters. Actually a motorist has been found who was unable to pay a fine for scorching. Some magistrates evidently imagine such a person never existed, judging from the loose and careless way they impose pocketbook-wrecking fines. When some of these justices and policemen discover that the motorist is only mortal after all and that the man at the wheel is no Cræsus, then we may expect sane legislation.

A. G. Vanderbilt, gossips say, is building a car capable of doing 152 miles an hour. If this speed is developed the next thing in line will be a machine that will get there before it starts. That'll be going some.

The Week

Rumor from Detroit says certain members of American Motor Car Manufacturers' Association are organizing a tire manufacturing company.

Oscar Hedstrom, on Indian motor cycle, smashes 25-mile road record, doing distance in 32 minutes 24 2-5 seconds.

Philadelphians practically decide to hold their show in National export exposition building, March 3 to 10.

England announces tire test for next spring, experiments of pneumatics and solids being included in plans.

Henry Souther, A. L. A. M. metallurgical engineer, outlines plan of campaign to learn steel secrets.

New Jersey motorphobists plan ditches instead of bump the bumps to stop scorchers.

Aerocar Co. announces its plans for construction of air-cooled cars in Detroit.

George E. Bradbeer, in Premier runabout, wins hill climb at Riverside, Cal.

Senator Morgan plans extension of southern circuit into Cuba; racing gossip.

Monarch Automobile Co., of Aurora, Ill., placed in receiver's hands.

Transcontinental Tourist Megargel checks in at Los Angeles, Cal.

Motorphobia can be cured, but the only way to do it is to stop scorching.

⁂

Football having climbed to a rear seat, motoring will now have to put on goggles and face the glare of the calcium.

⁂

With the Philadelphia motorists caught by the conflicting state and city laws, it is evidently a case of if you do you don't.

⁂

Talking of $7,000,000 worth of business at the Olympia show makes one suspect Ernest Terah Hooley is again loose in the land.

⁂

One might imagine that Ponce de Leon's fountain of youth has been discovered gurgling out of the sands of Florida if the rush for accommodations at Ormond can be taken as a criterion.

⁂

John Bull can strut around from November 25 to December 8 with the proud satisfaction that he has promoted the greatest automobile exhibition ever held. In passing it might be mentioned that the Paris salon starts December 8.

⁂

It isn't so many miles from Pittsburg to Syracuse, as far as distance is concerned, but in time the two towns are a full century apart, as is shown by the fact that a country like near Pittsburg is fighting the wide tire law, while around Syracuse the farmers are working to have a wide tire law put on the books and enforced. Just such instances as this show how some sections learn sense quicker than others. Mr. Farmer should make a run for the band wagon.

⁂

England's proposed tire test strikes the American as one of the most sensible things ever attempted in the motoring line in that country. Anything that will help the man of moderate means enjoy the sport should receive hearty support from the trade and if perchance something is done to bring out a solid tire that will hit it off right for the poor chap, so much the better for the game as well as for the car manufacturer.

MOTORISTS CAN SECURE GOOD ROADS

If the good roads movement is to grow, work among the farmers is absolutely necessary; there must be a campaign of education. The value of the farm lands in the United States is $6,133,000,000, the value of crops to be moved each year is not less than $4,707,000,000. Practically all of this must be moved to some extent over public highways. In addition, the value of horses is figured at about $1,222,000,000; so the farmer is not so badly off as one might suppose.

The government has proved that a single horse can haul on a good macadam road 6,700 pounds; that on a dirt road it can haul but 3,300 pounds. In other words, a farmer must keep two horses to do the work one could do on good roads. It costs the farmers $946,414,665 to move their products; on good roads it would cost about 40 per cent of this. The farmer might save 60 per cent were he wise.

Yet, with these figures staring him in the face he is opposed to good roads simply because he fears automobilists will enjoy a ride over the highways he has improved. In New York state 100 miles of road can be built under the state aid plan so that the man who owns a $3,000 farm will pay only about a single dollar as direct tax and not over 25 or 50 cents as his share of the state's proportion taken from the general taxes.

If the automobilist will acquaint himself with a few such facts and will take the trouble to talk to farmers whenever opportunity offers, converts will be made gradually and the opposition on the part of the farmer will be eliminated. It is up to the automobilist to secure good roads in this way.

Digitized by Google

CIRCUIT IS GOING INTO CUBA

Senator Morgan, Reassured by Appropriation of $5,000 by Havana Council, Plans Extension of Southern Racing—Great Interest Displayed in Ormond Meet

New York, Dec. 4—That Senator Morgan's southern circuit will be extended to Cuba now seems assured. A brief press cable brings the all-essential news that the Havana municipal council has appropriated $5,000 toward the promotion of the Cuban tournament. It may now be explained that the insiders, while sure that Morgan's luck and hustle would pull the affair through somehow, have known for some time that the running of the meet was entirely dependent on the Havana council making a liberal appropriation for it. The somewhat disturbed political situation in Cuba did not give much encouragement that such action would be taken unless strong pressure was brought to bear. Morgan, when the cable came, was about to get a move on himself to this end, as he did last year when he obtained the government permission for the use of the military road, which the Havana automobilists themselves had failed to secure. It must be understood that Senor Conill, who is still in this country, had told the senator that he must not depend on him for a guarantee of the expenses, a big deficit having been on the shoulders of the club last year, amounting to several thousand dollars, the profit from the grand stand having been far short of meeting the cost of the race.

Senator Morgan will now proceed at once to get out his entry blanks. The distance of the race has been extended to 200 miles. This will necessitate four trips over the 50-mile course between Arroyn Arenas and San Cristobal unless the projected road be built, affording a loop and enabling the race to be made a continuous run instead of a 50-mile relay affair. How perfectly the race was managed, how well the course was policed by the rural guard, and what a magnificent stretch of smooth highway comprised the course was told fully by the writer in Motor Age's story of the initial event published last February.

With the floral parade taking place on Sunday, February 4, the tour of the island the 3 days following and the gymkhana on Friday or Saturday with the big race on Sunday, February 11, and the sprint race on Monday, February 12, it will mean but a fortnight added to the week at Ormond and assure racing men and race followers getting back to New York or Chicago by February 15.

The program of the sprint races, which will be run on the military road between Guanajay and San Cristobal, where there are the best stretches of racing ground, will probably consist of races at a mile and 1, 5 and 20 kilometers.

Already the participation of Lancia and Fletcher with the Fiats, Foxhall P. Keene with the Mercedes, Walter White with one and perhaps both of the White steamers, and one of the Darracq Vanderbilt race cars seems practically assured. Senor Conill has leased a Clement-Bayard racer from the French factory to represent him in the Havana cup race, which Carricaburu won for him last year with a Mercedes. Other Florida entrants are pretty sure to extend their campaign to Cuba.

It is stated on authority usually well informed that there is no doubt now of the participation of W. K. Vanderbilt, Jr., in the Florida races, while his name continues to be connected with the proposed Darracq 2-miles-a-minute candidate. Another story has it that he may be the pilot of the great Mercedes racer, which Clinton R. Mabley says the Connstadt factory is building for the Ormond-Daytona meet. The young millionaire made his 39 seconds mile in 1904 with a Mercedes and was naturally considerably cut up last January that the same make failed to bring to him the record-cutting that fell to others at that time.

A. C. Newby, president of the National Automobile Co., confirms the report that Carl Fisher will drive a 60-horsepower six-cylinder National in Florida. Mr. Newby, while hardly expecting victory in the sprint races up to 5 miles, is confident the National had a more than even chance for the 30-mile American car championship and will give a good account of itself against the foreigners in the 100-mile race for the Minneapolis cup. Indianapolis, by the way, is also to give a cup, which will probably be the prize in the American championship contest. George Robertson, who piloted the Christie in the Vanderbilt trial, is named as the probable driver of the six-cylinder Premier which was not completed in time for the elimination trials for the American team.

J. Howard Johnson and William F. Hogan, both members of the club and residents of Paris, will represent the Automobile Club of America at the coming international conference of clubs, which will be held in Paris beginning December 11. At this conference the question of the future international road racing is likely to be settled. The chances are that the Vanderbilt cup will be returned to the A. A. A. for competition in this country.

What will be done about the Bennett cup is harder guessing. Few believe, however, that it will pass into a mere touring trophy. If France be unwilling to promote a race for it, the logical and just procedure would seem to be to offer the contest to the other clubs in the international union in the order of their finish in the last race. France still has a hug for the promotion of a grand prize race next year in which its own cars shall have a 3 to 1 or some other preposterous representation based on a claim of that preponderance in motor car manufacture.

Henry L. Bowden, of Boston, who scored 32⅘ seconds for the mile with his double-engine Mercedes freak at the beach last January, is out of the motor car racing game for good. The two engines of that car he put in his motor boat. Now he offers for sale his remaining fast machine, Flying Dutchman I, the Mercedes which Basle drove so successfully on the track. This machine was offered as a substitute for the Dinsmore Mercedes in the Vanderbilt cup race, but technicalities prevented its acceptance. It was fitted with new cylinders and a new gear box and generally tuned up. Mr. Bowden thinks it ought to hold its own with the best machines at Ormond, but at the meet he will be missing as a competitor for the first time in 3 years, though he may be a spectator and later participate in the motor boat races at Palm Beach.

Senator Morgan is also considering a still further extension of his southern circuit. At a conference Saturday with H. E. Bemis, manager of the Colonial and Victoria hotels at Nassau, N. H., who will have charge of the Continental hotel at Pablo-Atlantic beach, near Jacksonville, Fla., when it opens on March 15, the suggestion of Mr. Bemis that a 3-day meet be held on this beach April 4-6, was well received by the senator. Of the availability of this beach as a race course much in its favor has been written, embodying Morgan's inspection and Walter Christie's trial of it.

Morgan argues that, following the Cuban carnival, it would make a fitting finale to the winter's racing. It is possible, though, that the meet may not even be the wind-up. E. H. R. Green has written Morgan asking him to get up a tournament for Galveston beach also. The senator is inclined to take the latter proposition to follow the Pablo meet.

The story that Alfred Vanderbilt is having built for the Florida meet a great American racing creation is persistently printed and is backed by one who is usually well informed on racing matters. The car, they say, is to be 250-horsepower.

Francis Richard, a French engineer, who recently placed a new carburetor on the market, is named as the designer. It is said the machine has eight cylinders, with shaft drive, a wheel base of 116 inches, a standard guage, and 10 inches clearance. There will be nothing of the freak about it. The various parts have been manufactured in shops in New York, Jersey City and Newark and the assembling is being done in this city, it is said. Paul Sartori, who will drive it, will take it to Florida early in January for practice and tuning up for the Ormond and Cuban meets.

M. J. Rothschild, of Audinau & Co., who returned from Paris Saturday, says he understood there that Henry Fournier himself was coming over to drive the Itala car in Florida and that the Renault people were to be represented by Sisz. The news here is that Hemery, who has apologized and been let off with a fine, will be reinstated by the French and Italian clubs and come over to drive a Darracq on the southern circuit.

A. L. Kull, the local representative of the Wayne Automobile Co., tells of the strong play to be made by him for racing honors at Ormond with the Wayne. The campaigners are to go to Florida in a special car furnished by the Seaboard Air Line, which will be sidetracked and used as a home during the meet. A strong bid

Digitized by Google

for the American championship will be made by a 50-horsepower car. A 40-horsepower racer will be entered for the middleweight events. Deacon Holmes will do the driving. Both of these cars are expected to arrive here next week and will be on exhibition until they are sent to Florida for the beach races.

L. H. Palmer, of the Long Island Automobile Club, will send to Florida the two 60-horsepower Matheson cars owned and entered by him for the American eliminating trials. Wally Owen is to be pilot in all but the amateur events, in which Mr. Palmer will take the wheel.

QUAKERS UP AGAINST IT

Philadelphia, Pa., Dec. 4—Unless an amicable adjustment is made before New Year's day, any man who drives an automobile in Philadelphia on that day will be arrested. This is because of a clash of city and state officials over the construction of the new automobile law. The state law requires that on and after New Year's day, 1906, there shall be exhibited on all motor vehicles two state licence tags. No other tags of any kind must be shown. The city ordinance provides that all motor vehicles must display the city's blue and yellow tag. If this tag is not shown, the ordinance directs the arrest of the offender. If it is shown, the state law directs the arrest of the offender. Automobilists, when they saw confusion looming up, went to the state attorney general, who told them that city laws did not count. Then they went to the city solicitor, and he told them that the attorney general was wrong, that no motor vehicles would be allowed in Philadelphia without the city number. The city solicitor did not protest against other numbers, however. He was willing to compromise, to let any car carry the state tag on an equality with the city tag. He did not even object to half a dozen other tags. But he insisted on the yellow and blue label. But the attorney general refuses to compromise.

PARIS SHOW PLANS

Paris, Nov. 25—Every indication points to the Paris salon being the finest exhibition of automobiles ever attempted, despite the pronounced success of England's Olympia show, which has just ended. It is true many of the leading French makers displayed their 1906 goods across the channel, but this is not expected to take any of the wind out of the sails of the salon, for the reason that all the new things were not uncovered in England. Anyway, there is only one Paris show and everyone has been saving up for this big event. Even at this early date, with the show not starting until December 8, the management is busily engaged preparing for opening its doors. It is safe to predict that there will be no unfinished exhibits at the salon and right on the dot every maker will be ready at the scheduled time.

A record attendance is looked for. The American delegation will be a strong one, while from England, Germany, Austria and other continental countries will come the automobile enthusiasts, all eager to see the latest thing for 1906. A special automobile bus service will be installed which will run to the Grand Palais.

MAY MAKE TIRES, TOO

Strong Rumor that Independents Will Go Into the Rubber Game On Their Own Account

Detroit, Mich., Dec. 6—Special telegram—From statements from an indisputable authority, the New York correspondent of MOTOR AGE, now in this city, is able to confirm positively the report that certain members of the American Motor Car Manufacturers' Association are organizing a tire manufacturing company. The promoters of the scheme have gone so far as to secure a factory and contract for machinery, and state that the production of tires will actually begin early in January. Several leading independent makers have already subscribed to the stock and other members will be given the same privilege. The plan of stock distribution is intended to be proportionate to the respective outputs of the subscribers, who are to be restricted to A. M. C. M. A. members. There is no intention of cutting the established prices—the whole idea is a coöperative one, in which the benefits arising are to be derived from the dividends earned and the assurance of securing an adequate and prompt supply of tires.

The scheme has been under way for some time and was thoroughly discussed and approved at the meeting of the executive committee of the independents held in New York 10 days ago.

In reference to the report that the licensed association members had in mind the formation of a similar company, George H. Day said last Saturday, in reply to questions put by the writer: "This is as big news to me as it will be to the public. If our members have any such intention I have heard nothing of it."

One of the reasons advanced for the formation of a tire-making concern by the automobile makers is the alleged combination of all the manufacturers of tires with one or two exceptions is so close as not only to name prices but to limit the outputs of the factories as well. The story as told in the east is that the Rubber Goods Manufacturing Co., which includes the Hartford, Dunlop, Morgan & Wright, and G & J concerns, will make 33 per cent of the $9,000,000 worth of tires which the tire makers will put out; the Diamond, 23 per cent; the Goodrich, 23 per cent; Fiske, 9 per cent; International, 6 per cent, and Goodyear, 6 per cent. This allotment is based on the previous year's business, and a $10,000 fine is paid if the rule is broken.

It is further alleged that the allotment is made by the month and that if a tire concern is allotted $45,000 worth of business for a month, and its sales amount to $60,000, 40 per cent of the $15,000 excess must be paid to the pool; also that makers are fined for cutting prices in any way, and for giving away tires on any pretext whatever.

It is not anticipated that the formation of the new company will be the means of causing a tire price war, which might be welcomed by the purchasing public. It has been pointed out that this would be a fatal step to any concern making it, for price-cutting would probably be the cause of cheapening tire construction, whereas today the endeavor of all makers has been and is to improve the quality of the goods they manufacture. Such action would mean the downfall of the American tire business, if not the American automobile business, and would be the means of letting in foreign goods. There is little danger of this from either side, however.

DITCHES INSTEAD OF BUMPS

New York, Dec. 5.—Jersey automobilists are somewhat grouchy over the latest proposition advanced by the farmer contingent for the prevention of overspeeding in the wilds of the cranberry and trust state. The project has the bump the bump scheme of Chicago beaten a mile or so. The farmers have an idea that not enough of the speeders have been brought to justice and they have devised a scheme which they think will act both as a deterrent and a punishment. The plan consists of the construction of gutters across the highway, 1 mile apart, so formed that if the machine is running at a high rate of speed, it will be overturned, or, in other words, they want to ditch the car. Assemblyman Scovil has been asked by the Magnolia farmers to get an amendment tacked on the speed law whereby these ditches can be built. Take the White Horse pike for example. By building ditches 1 mile apart, the farmer constables could keep tab on the machines. They would know that a machine must slow down at a certain point, and then the matter of arrest would be easy. And then, it is argued, the ditches would deter the speeders for fear of accidents.

PREMIER WINS HILL CLIMB

Los Angeles, Cal., Dec. 1—The hill-climbing contest on the Box Spring canyon grade, near Riverside, Thanksgiving day, for automobiles costing less than $1,650, drew a small crowd. The course was about 4 miles long, and the surface good. The grade averaged less than 8 per cent and there were no steep places. All the cars made the whole distance on high speed. Bradbeer, with a Premier runabout, won the climb, his time of 6 minutes 43⅗ seconds, being best. The times were as follows: George E. Bradbeer, Premier runabout, 6:43⅗; W. K. Cowan, Rambler surrey, 7:01; Harris Hanshue, Reo touring car, 7:08; Ralph C. Hamlin, Franklin runabout, 7:32⅖; Clarence Smith, Maxwell touring car, 8:02⅖; W. L. Moreland, Tourist runabout, 8:15; D. Ferguson, four-cylinder Moline, 8:17; W. J. Burt, Reliance, with body on, 8:28⅗.

SPEEDWAY RUMOR AGAIN

New York, Dec. 5—It is now declared that the great Barnegat speedway is assured. The new track will give a 30-mile speeding course and include a 3-mile circuit for track contests. The new speedway will be 3 miles south of Tom's run, 11 miles below Lakewood. A club house and garage will be built and 1,000 members sought. The New Jersey Automobile Speedway Association, of which Jason Waters, of Atlantic City, is president, has been formed to put through the project.

Digitized by Google

BUSINESS IN RUSSIA

Automobile Conditions in Czar's Domains Shown in Federal Report—Possible Chance

Washington, D. C., Dec. 4—Reports received by one of the federal departments show natural conditions in Russia are both favorable and unfavorable to the automobile trade. The favorable ones are found in the absence of many hills and the long distances over level stretches. The unfavorable are in the long winters, the intense cold, and the absence of romantic places or scenery to attract tourists. The people and public officials do not favor this method of traveling for they are poor sportsmen. The Russians apparently have little skill in handling complicated machinery, hence the inability to get chauffeurs at reasonable terms. The country people are often bitter enemies of the automobilists, the roads of the Russian empire are often wretched, and the network of ways far from what it might be and what it will have to be before the great Russian empire can count on a successful industrial career.

In the cities it is different. There everything favors the automobile. The slowness with which street railways are built forces many families to keep carriages. These will doubtless turn to automobiles. The only serious obstacle to a rapid development of the automobile trade in the large cities is based on police supervision and regulation. Now that a great change has come over Russia's police and other policies, trade in automobiles may develop unmolested. Each of the different cities, however, has its own way of handling the automobile traffic. St. Petersburg and Moscow long since recognized the automobile as a necessity, hence their regulations are comparatively liberal. Riga and other cities have been rather severe. In those places certain streets may not be traversed by automobiles. Applications in writing for permission to use an automobile must be made and the car must be subject to expert investigation by the authorities.

Up to date Russia, including Poland, the Caucasus, and Finland, has from 1,200 to 1,500 automobiles, among them many of the lighter kind. Besides these there are about 1,500 motor cycles. Manufacturers interested in discovering the actual conditions governing automobiles and the automobile business in Russia will do well to go over the ground carefully in every large city from St. Petersburg and Moscow down to the smallest place in which sales are to be sought. The farther the empire emerges from a mere agricultural country to a position among the industrial and commercial countries the automobile business is bound to grow. The men who own the mines and forests will want automobiles, for in the long run they will be found far superior to horses, for these latter call for great care and entail enormous expense to their owners.

No one has done much about building motor cars in Russia. A St. Petersburg firm that built motor boats tried its hand at the automobile, while another firm is now doing what it can to manufacture cars in imitation of a well-known American make, also one resembling a well-known German type of car.

The peculiar needs of Russia in regard to automobiles have never been met. The comparatively great success of the American cars has been attributed to cheapness, abundance of supply, skillful advertising, etc. Simplicity of construction and driving are the prime requisites. Great speed is not required because of the danger from bad roads. Low speeds are wanted because of the steep hills and bad places that require the cars to go slow. The springs must be stronger and longer than they usually are in other countries.

California Oiled Road

Megargel's Arrival at Los Angeles
A Southern California Road

IN NO FEAR OF DESERT

Megargel to Find Out for Himself If the Great American Wastes Can Be Crossed in Car

Los Angeles, Cal., Nov. 29—The Reo Mountaineer, of New York, arrived in town Tuesday noon, after a pleasant trip down from San Francisco, with the exception of some pretty heavy showers on the last 2 days, which made driving a little more difficult than when dry. California is certainly an ideal state for motoring and both Fassett and myself are so pleased with its well-kept oil roads that without doubt we shall invade the state again by motor in the near future, though possibly not together.

All day today I have been planning out a return route across the dreaded sands of New Mexico and Arizona—a course that I have been informed time and time again is impractical, but always by someone who has never tested it himself to find out. I'm going to find out and in another month I will be in a position to tell the automobile fraternity whether or not these sandy wastes now known as the Great American desert and crossable for automobilists. Candidly, I think they are and that the tales of hardships are much exaggerated.

Just before leaving Frisco I ran across my old friend Whitman, the record holder, still driving the Franklin with which he did it in. A good photograph of the Franklin and the Reo Mountaineer, both cars the battle-scarred champions of transcontinental trips, was taken at Frisco just prior to our departure from that city. Upon arriving at Los Angeles one of the first persons I ran across was Billy Chadeayne, who has just crossed the continent on his Thomas Auto-bi. He is secretary and treasurer of the Auto-Bi Co., of Buffalo, and it was like being home to run around Los Angeles with him.

When we arrived in Los Angeles our Reo car was so covered with mud that it was hardly recognizable, for California produces some mire after a 2 days' rain, but then this mud, so much talked of by the Californians as doby was not to be compared with the Nebraska product of the same name, nor with Iowa and Illinois gumbo. It was hard wheeling on some of the grades, where the mud was 2 or possibly 3 inches deep, but there was no sinking in up to the side steps, nor occasion to utilize the faithful windlass.

Los Angeles, the greatest city for automobiles for its size in the world, has not been over-estimated and its importance to the industry seems to be recognized by every manufacturer. It is indeed an unheard of machine that is not well represented here. L. T. Shettler, the Reo agent, boasts of some 200 Reos sold here this year that are now in use on the city streets and he is at the present time at work on one of the handsomest garages in the country—an edifice that would shine in New York city were it there.

We heard much about the grades over the mountains on the run from Frisco to

Digitized by Google

Los Angeles. While it is true the road ran over some extremely high mountains, the grade had been made so gradual and the general surface of the road was so good that most of the grades could readily be traveled on the high speed. Our grad-ometer never registered over 12 per cent on the entire run, while the majority of the grades seldom are over 7 per cent. The turns in the road, however, were decidedly sharp and on some of the hills, automobilists were warned by signs that the state law forbade a speed of more than 4 miles an hour. These notices were signed by the road commissioner.

We ran through several bunches of cowboys struggling with obstinate cattle. In one case the Reo Mountaineer was held up for nearly an hour, awaiting the removal of a huge steer which had been roped and thrown across the road. Immediately upon regaining his feet he would charge first one horseman and then another. Several times he charged the automobile, but was always brought up with a jerk when he reached the end of the several lariats that held him. Finally, with two ropes dragging him and another rope behind, which kept him from charging the ponies ahead, he was hurried up the road, one horseman riding behind spurring him and at the same time twisting his tail.

Since our arrival here we have listened to all kinds of stories about the old Santa Fe trail across New Mexico and Arizona. It seems to be the general opinion that an automobile cannot tour these two states, although I have been told that if we run along the railroad ties we may be able to get through the sand deserts. Water is said to be anywhere from 5 to 100 miles apart, but with every confidence in the Reo Mountaineer's ability to conquer everything ahead of it we shall push on toward the latter part of the week and expect to make New York city in time for the two automobile shows.

We heard much about the grades over the mountains on the run from Frisco to Los Angeles. While it is true the road ran over some extremely high mountains, the grade had been made so gradual and the general surface of the road was so good that most of the grades could readily be traveled on the high speed. Our grad-ometer never registered over 12 per cent on the entire run, while the majority of the grades seldom are over 7 per cent. The turns in the road, however, were decidedly sharp and on some of the hills, automobilists were warned by signs that the state law forbade a speed of more than 4 miles an hour. These notices were signed by the road commissioner.

The Spanish names of the towns passed through between San Francisco and Los Angeles in many cases were hard to pronounce. It was also a difficult matter upon numerous occasions to secure information as to the best roads, as Spanish is spoken by fully one-fourth of the people encountered in this region. Among the towns passed through having Spanish names were: San Jose, San Juan, Nativadad, Gonzalez, San Lucas, San Ardo, San Miguel, Pas Robles, Santa Margaritta and San Luis Obispe.—PERCY F. MEGARGEL.

RUNABOUTS IN A TEST

De Dion Makes Best Showing of the Lot at the End of Third Day of Paris Trial

Paris, Nov. 25—Half of the journey of the runabouts competing in the 6-day test was completed last night, with the de Dion the most prominent candidate for

CORMIER IN A DE DION

BARDIN PASSING THROUGH GAILLON
RENONCE IN A GREGOIRE

the honors. Thirteen cars started in the trial last Saturday and their work has been closely watched by those who claim there is a great future for the light machines. The tour is over highways near the metropolis and embraces 772½ miles and 125 miles are covered each day. The roads are giving the severest test to the cars in the way of grades, poor going and other difficulties. The cars are rated, in the summing up of points, as to their ability to keep as close as possible to the 15½ miles an hour schedule. A car which falls behind this pace for any reason is penalized 5 points to the kilometer on each stage of the day's trip, but this can be made up by good work later.

On the first day the test was over a 125-mile route from a Paris garage, the Darracq, to Mantes, thence to Vernon, to Virage, to Gaillon, then back to Vernon and then back to Mantes. It resulted in victory for the three de Dion-Bouton cars, the Lacoste-Battmann machine and two Gregoire runabouts, which succeeded in getting in without a penalization against them. The cars covered the 125 miles of muddy, rain and snow-soaked road at an average speed of 20 miles an hour. The cars were equipped with 8-horsepower motors and none of them weighed over 1,210 pounds. The three de Dions were one-cylinder machines and were fitted with Dunlop tires and shaft drive, as was also the Lacoste and two Gregoire machines. Out of the thirteen entered only two broke down and returned to the starting place. One was a Hugot, which experienced trouble at the start and went only a few kilometers. The other was a Lacoste, driven by Gallet.

The cars returned to the starting place, the first ones in 2 hours 37 minutes 4 seconds. They were the three de Dions. The Lacoste-Battmann got in in 3 hours 5 minutes and the two Gregoires in 3 hours 6 minutes and 3 hours 11 minutes respectively, No. 2 leading No. 1 by 5 minutes. Gregoire No. 3 was penalized in the first and second stages and took seventh place. The Vulpes, driven by Barriaux, was penalized 340 points, the Thomas Lacoste 350, the Deemeester 390, and the Gladiator 790. The Gallet Lacoste and the Hugot had quit the competition earlier.

The second day's run produced practically the same results as to finishes as the first, while the third showed several reversals of form. The de Dion, Lacoste and Gregoire cars still led with no marks against them. The de Dion, driven by Cormier, was first, the Lacoste second and the Gregoire third.

Several of the cars, notably the Vulpes, driven by Barriaux, had reduced the penalizations. Barriaux was in fourth place, with only 65 points against him, as opposed to the 95 which he incurred the first day in the first and second stages of the journey. The tour, which was made each day over the same route, was covered in practically the same time. The successful de Dion car covered the morning stage of the third day, 75 miles, in 3 hours and 15 minutes at an average speed of 22 miles per hour.

At some stages of the journey the little 8-horsepower machine reached an average of 31 miles an hour. Seven of the entrants the third day incurred no penalizations.

At the end of the third day the penalizations were as follows: Cormier, de Dion; Gachet, Lacoste-Battmann; Renonce, Gregoire, 0; Barriaux, Vulpes, 65; Bardin, de Dion, 195; L. de Dion, de Dion, 195; Tavenaux, Gregoire, 240; Thomas, Lacoste-Battmann, 320; Rochay, Lacoste-Battmann, 350; de Bosch, Gregoire, 1,165.

Digitized by Google

ROOM FOR ALL TO SHOW

Main Floor of Philadelphia's Exposition Larger than Madison Square or the Coliseum

Philadelphia, Pa., Dec. 4—At a meeting of the Philadelphia Automobile Trade Association last week it was practically decided to secure the old National export exposition building, in West Philadelphia, for the annual show. An application has been forwarded to the national association for a sanction for March 3 to 10, and there is every reason to believe it will be granted. President A. E. Maltby has appointed a show committee consisting of W. C. Barrows, of the Pennsylvania Electric Vehicle Co.; W. F. Smith, manager of the local Rambler branch house; W. J. Foss, of the Foss-Hughes Motor Car Co., Pierce-Arrow, Cadillac and Baker; John A. Wister, of the Gawthrop & Wister, Yale, and Percy L. Neel, manager of the Quaker City Automobile Co., Pope-Toledo and Franklin.

The show building, which was the main structure of the export exposition, is amply large to comfortably accommodate all applicants for space, and all on the ground floor. Indeed, the main floor area is larger than that of the Madison Square garden in New York or the Coliseum in Chicago, while on the second floor in the front of the building are numerous rooms for offices, etc. The P. A. T. A. has promoted several previous shows, and has experienced the disadvantages of holding such exhibitions in small buildings. Last winter, for instance, the First Regiment armory was selected, and so inadequate was the floor space that not a few big concerns absolutely refused to accept the small sections offered them, and held individual shows in their several establishments. Despite the fact that all the exhibits were cramped, the corridors and company rooms were so blocked with cars, launches, accessories, etc., as to make it quite uncomfortable for visitors. This year it was decided that the advantages of sufficient space far outweighed the disadvantage of location of the export exposition building, which, after all, is no farther from the geographical center of the city than is the Second Regiment armory, in which the 1904 show was held. It is well lighted and heated and well equipped for electrical displays. Besides, exhibits shipped by rail can be run direct to the east doors of the building, which is but a few feet from the tracks of the Philadelphia, Baltimore & Washington Railroad, a Pennsylvania line. This will be a great convenience to out-of-town exhibitors, as it will enable them to effect quick installation and get away. An idea of the capacity of the building may be had from the statement that it was selected by the local Republican convention committee when McKinley was nominated for the presidency the second time.

At the annual meeting of the Philadelphia Automobile Trade Association, which will be held at the Hotel Hanover tomorrow night, officers will be elected to serve for the ensuing year. At last week's meeting the following nominations were made: For president, A. E. Maltby, of the Winton Motor Carriage Co.; vice president, W. F. Smith, of the Rambler company; secretary and treasurer, Manager Morse, of the Locomobile company; for members of the board of directors, W. F. Smith, Rambler; L. E. Hoffman, Ford; Samuel Cohen, Reo; Percy L. Neel, Pope-Toledo and Franklin.

An idea of the ease of access of the export exposition building to the center of the city is had from the fact that it is directly across the street from Franklin field, the University of Pennsylvania's stadium, where 25,000 football people are frequently handled in jig time by the Rapid Transit Co. and the Pennsylvania Railroad, the latter having a station within 100 yards of the entrance. The actual distance of the show building from the city hall is about 1½ miles.

NEW DETROIT CONCERN

Detroit, Mich., Dec. 4—Every effort is being made by the Aerocar Co. to complete its factory in time to turn out a model of its air-cooled car for the New York show. It is less than 30 days since the idea of organizing a company struck Alex Y. Malcomson, treasurer, director and a large stockholder in the Ford Motor Co., and with his customary hustle he proceeded to put his ideas into execution. Contracts for the construction of a factory on the block intersecting the Michigan Central Belt line were let. It is to be over 400 feet in length and when completed will occupy nearly the entire block. Such rapid progress has been made that the power plant is now almost under room and it is expected the plant will be running early in January, the contract calling for the building to be completed in 40 days. M. O. Reeves, vice-president and general manager of the Reeves Pulley Co. and the Reeves Machine Co., of Columbus, Ind., is the inventor and maker of the air-cooled motor which will be used. It is four-cycle and made in two sizes, with the cooling fan in front. Mr. Malcomson, a wholesale and retail coal dealer with establishments in Toledo and Detroit, is at the head of the new company. Walter G. Morley, formerly with the Olds people, is purchasing agent and advertising manager. The mechanical superintendent is E. J. O'Hagen, who comes with over 7 years' experience with the Winton company. C. Pfahler, a graduate of the Technical university of Berlin, is chief draughtsman and H. H. Thorpe, sales agent, occupied a similar position with the Franklin company.

COTTA SCORES A POINT

Chicago, Dec. 1—Charles Cotta, of Rockford, Ill., scored a point in the suit brought against him in the United States circuit court by the Four-Wheel Drive Wagon Co., of Milwaukee. The Milwaukee concern filed a bill for specific performance, but Cotta entered a demurrer which was sustained by Judge Kohlsaat. The case came up Wednesday. According to Cotta's version he and H. Theodore Hanson, the promoter of the Milwaukee company, entered into a contract some time ago, but Mr. Hanson recently violated the same. Hence, when the Milwaukee company sued to recover a license from Cotta, it was overruled on the grounds that it had failed to carry out its part of the contract.

TO PEER INTO FUTURE

Steel Commission to Visit Europe to Study Experimental Alloys and Plan a Campaign

New York, Dec. 4—The organized campaign instituted by the Association of Licensed Automobile Manufacturers for the mutual benefit of the trade in regard to the establishment of a standard for steel for the mills is now in the hands of Henry Souther, metallurgical engineer in charge of the experimental laboratory of the mechanical branch of the A. L. A., who declares that the investigation to be conducted abroad by the steel companies in the interests of the automobile manufacturers is for the purpose of studying experimental alloys and that they intend getting a line on the future. Mr. Souther declares Americans are going to win by team work, where their European rivals had to find out what they know of steel through individual competition. Speaking of the foreign mission, Mr. Souther said:

"The object of their mission seems to have been a bit misunderstood. They are going abroad to study experimental alloys and not to adopt anything now in use. That is an old story to us. They are not to investigate what is commercial today but what may become commercial in the years to come. French experimenters have compounded certain alloys in an experimental way. Their object is to find out if any are better, and if so, commercially. We Americans have been using for 15 years in projectiles and armor plate chrome nickel steels that have not been excelled in the world. The same alloys have come to the front in automobile manufacture. Our steel makers have learned that nothing is too good for the American manufacturer.

"Our importation of foreign steel is comparatively insignificant—some Jessop steel for tools, some Syrian steel and a little of the French malleable nickel alloys for valves and scientific instruments. Some foreign steel has been used in our automobiles for the reason that European makers have been willing to make small quantities. The Europeans have used good steel in their motor cars. This comes from racing, which has taught them that the best steel must be used. We have had the same advantage, though, first from a proper following of their experience, and, second, from the strenuous demands for strength and durability incident to our bad American roads.

"Into my laboratory have come samples of both foreign and American steel and I have yet to see any foreign steel that has excelled ours of the same grade, and I have yet to see any foreign steel being used commercially that its counterpart has not also been commercially used here. For 2 or 3 years makers of our highest grade cars have been using these finest qualities of steel.

"We are following the lead of the government in its manufacture of projectiles and armor plate, and of the bridge builders and other users of the highest grades of steel in seeking by experiment the best for the purpose. We are standardizing.

Digitized by Google

We are trying to determine the best steel for each particular part. But this is only tentative and may be changed by the result of development and experiment.

"We know now what is the best from experience, in so far as other industries go by experience. We are adopting standards, so that we can ask for something definite for each part. Some of our members have had the advantage of such specifications. Now the mechanical branch of our association seeks to give this advantage to all. The inspection will be as rigid as that of the government, and will be made at our laboratory in Hartford, where we have counterparts of government testing machines and a force of chemical and physical experts. Members are sending samples of their purchases to the laboratory which are thoroughly tested and put through the various operations of forging, annealing, hardening and tempering to determine their quality and fitness. The best of steel may be ruined by ignorant treatment, so we are getting out a set of standard instructions. We see what a member has bought and tell him how to handle it. We determine by our tests what is best for him to buy. Steel may be ruined by overheating, by forging at improper temperatures, and by hardening improperly. Every different grade of steel requires different handling.

"The strength of steel is measured and expressed by pounds per square inch. There are four grades. Low carbon steel will show a tensile strength of 60,000 pounds with an elastic limit of 40,000 pounds. The next grade, high-class carbon, shows 85,000 pounds tensile strength and 55,000 pounds elastic limit. Nickel steel annealed gives 85,000 pounds tensile strength and 60,000 pounds elastic limit. With special treatment its showing will be 100,000 and 70,000, respectively.

"The chrome nickel steels are the highest grades and will test at 90,000 and 65,000 pounds annealed and 250,000 and 150,000 with special heat treatment. The maximum commercial limit that has been reached in chrome nickel steel is 275,000 pounds tensile strength and 183,000 elastic limit. And let me tell you that no automobile engine in use has the power to strip gears made of this grade of steel."

MONARCH COMPANY FAILS

Chicago, Dec. 2—J. O. Mason was yesterday appointed as receiver for the Monarch Automobile Co., of Aurora, Ill., by Judge Bethea, of the United States district court, his bond being fixed at $15,000. The liabilities of the company may reach $75,000, while the assets are reported to be in the neighborhood of $20,000. The bankruptcy petition alleges that the assets of the company have been in the possession of Sheriff Burke at Aurora since November 29.

Creditors upon whose petition the company was thrown into bankruptcy are T. W. Williams, of Indianapolis; the Cartier-Chapman Co., of Ludington, Mich., and the Hartsburg & Hawksley Co., of North Aurora. The claims amount to $1,570. According to one of the stockholders the action was occasioned by an attachment suit, begun by A. B. Boucher, one of the organizers of the company, for money claimed to be due him.

PLANS BIG TIRE TEST

English Automobile Club Schedules Novel Contest for Spring —Hint of French Scandal

London, Nov. 25—The English automobile club proposes to hold a tire trial early in the spring for the purpose of testing the comparative excellencies of various tires on the market. The distance is tentatively fixed at 4,000 miles, and both solid and pneumatic tires will be divided into four classes—those designed for light cars, i. e., a running weight of not less than 1,500 pounds; those designed for medium cars, i. e., a running weight of about 1 ton; those for touring cars, i. e., a running weight of 3,000 pounds, and those for heavy power cars, with a running weight of about 4,500 pounds. No device will be permitted to be attached to the tire to aid and strengthen it or save it from any road stress, but a separate class will be formed for devices of this character. Not the least interesting feature of this trial is the separate classes opened to test solid rubber tires with minimum carrying weights of 1,500, 3,000, 6,000 and 14,000 pounds, respectively. This latter class is certain to attract a considerable amount of attention. With all their improvements—and they are many—pneumatic tires are still a heavy expense to the small car proprietor, and there are many motorists who would welcome a really good solid tire which would save them from that expense. The weakness of the solid rubber tire is that while at slow speeds and on good surfaces it performs its work efficiently, when the car is properly sprung for tires of that type, but as soon as speed rises to the neighborhood of 20 miles an hour, or roads become rough, the comfort of the passengers and the longevity of the engine and the running gear are sadly impaired. The solid tire motor car is a thing of the future, and until it comes the motor for the man of moderate means will remain unexploited. The commercial vehicle, too, has to be exploited on the solid tire, and the automobile club will do a great service to the industry if it helps to solve that problem.

A scandal is said to have arisen in France in connection with the official returns of one of the official timekeepers of the French automobile club, which has ended in the suspension of the official in question, and which has attracted considerable attention on this side on account of the issues involved. Owing to the impossibility of permitting cars to start off the mark together, the timekeeper in all important automobile contests practically has the decision of such contest in his keeping; and to such an extent has confidence in the probity of these high officials been held that they have been entrusted with their duties almost without supervision—certainly without that jealous supervision which was exercised when the British automobile club held the Bennett race in Ireland, and checkers were appointed by the various countries engaged. The result of that confidence, and the laxity it engendered, is the charges of improper returns, which have caused little less than consternation amongst the sporting automobilists in France. The wildest rumors are current regarding the issues involved, but as the case is subjudice nothing can be made public. In any event, it is to be hoped that the incident will lead to official and independent supervision of these matters in future. When it is remembered that $500,000 worth of business has often hinged on the mere winning or losing of a hill-climb or a record-breaking contest in France, it is not, perhaps, to be wondered at that anxious and unscrupulous traders should adopt the surest way to secure the business.

ARGUES ON ALCOHOL

New York, Dec. 5—Following the discourse of Whidden Graham before the Automobile Club of America last week, on "Alcohol as a Motor Fuel," there has been considerable discussion in the trade, locally, as to its real value for such purposes. Mr. Graham is an enthusiast on the use of denaturized alcohol which he believes, with duty removed, will largely take the place of gasoline as a fuel. The arguments in favor of alcohol, he says, are: Its cleanliness, its safety and its freedom from disagreeable odors. He called attention to the steady growth in the consumption of gasoline, through it being used so extensively for motor fuel, and hinted that this might ultimately result in a scarcity so marked as to cause an inordinate price. In fact, he said that since the coming of the motor car and boat the price had gradually risen from 6 cents to 20, 25 and in some instances 30 cents a gallon. On the other hand, denaturized alcohol, which is unfit for drinking purposes, were the tax removed, could be sold at a fair profit for 18 or 20 cents a gallon.

On the other hand, a number of people who have experimented with alcohol, among them M. André Massanet, general manager of the Panhard branch, declare that there are grave difficulties connected with its use. It is said that the same amount of horsepower cannot be developed with an equal amount of fuel, also that much heavier lubrication is required with alcohol than with gasoline. It is said, besides, that there is a certain amount of water in alcohol which rusts the cylinders and valves; and also that it is impossible to thoroughly strain alcohol so as to avoid dirt. Another argument advanced against the use of alcohol is that it is much more amenable to atmospheric conditions.

NEW MOTOR CYCLE MARK

New York, Dec. 2—A 25-mile handicap road race run over the Coney Island boulevard today resulted in new competition road records for motor cycles. F. P. Baker, of the Brooklyn Motor Cycle Club, on a 1¾-horsepower Indian, won, his time being 38 minutes 17⅖ seconds. Oscar Heilstrom, of Springfield, Mass., on a 3-horsepower double cylinder Indian, a scratch man, covered the course in 32 minutes 24⅗ seconds, lowering the record of 34 minutes 21 seconds for 25 miles, made by George H. Curtis, in Waltham, Mass., on August 9 last. There were nineteen starters, eleven of whom finished the race.

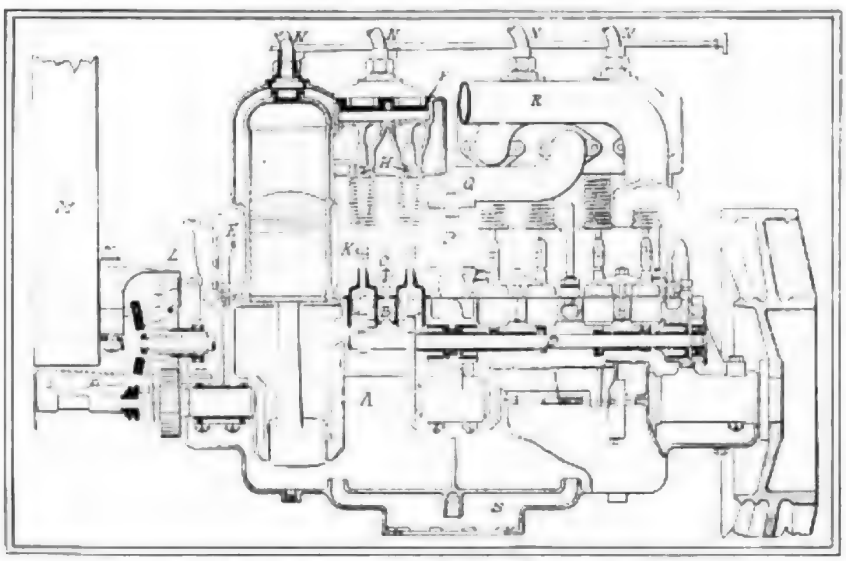
Digitized by Google

Three Columbia Models for 1906

Columbia 24-28-Horsepower Car

THREE Columbia models comprise the 1906 line of motor cars manufactured by the Electric Vehicle Co., of Hartford, Conn. Two of these are models of the present season that are being carried over, and the third is a new product from bonnet to tail light. Of the retained models mark XLVII, a 40-45 horsepowered car, is offered in much of its 1905 form, such additional features as the new style of lathe made crankshaft, as well as new material in the gear sets and many of the bearings. Besides these are a new carburetor, Mercedes type of hood and other body changes, making the model appear practically in new feathers. Mark XLIV, an 18-horsepower machine with an opposed motor carried crosswise beneath the hood and shaft drive, is among those listed for next season. The new model, a 24-28-horsepower car, with accommodation for four passengers and for five in an emergency, has many novelties in Columbia construction. Among these are noted make-and-break low-tension ignition with current from magneto; valves placed side by side in the bottom of ports on the left side of the motor, fly wheel spokes serving as a fan, three-speed sliding gear set, shaft drive and floating type of rear axle. I-section front axles are features of this car as well as of the large touring machine. This new machine, mark XLV, has a 98-inch wheel base, clearance of almost 10 inches, weighs 2,250 pounds and is further featured by the use of semi-elliptic springs in front and rear, and a three-point suspension for both the motor and the gear box. In all models roller bearings are used on the road wheels and in the rear axles, special babbitt carries the crankshaft and phosphor bronze is used in the gear boxes.

Model XLVI exhibits in its motor many features new in Columbia construction, but practically all of which are along the lines of standard practice. The four cylinders are cast in pairs, each pair being an integral casting with valve ports on the left in which are placed side by side the mechanical valves operated by vertical push rods from a single camshaft. The cylinder rating of 24 to 28 horsepower is based on a normal crankshaft speed of 900 revolutions per minute, but the motor has a range of speeds between 150 and 1,800 revolutions. The bore and stroke are 4 and 4½ inches, respectively. Aluminum is used in both parts of the crank case, the top part of which carries the three crankshaft bearings. The bottom portion with a special oil reservoir S, serves only in connection with the splash system of oiling. Three-point suspension of the case is one of the motor features. In this support scheme the side pieces of the frame are offset, to eliminate subframe pieces and the motor is carried directly on a steel cross piece and the main side channels. A new departure is noted in the crankshaft used, which, besides being made from a special carbon and nickel steel, is not drop forged, but made from a slab of cold metal. The general contour of the shaft is first hogged out, after which it is placed on a lathe and machined to a finish and finely ground to give as perfect a balance as it is possible to secure. The maker claims for this shaft freedom from welding such as is often used in forgings, and the complete manufacture of it without the heating process used in forging, in which the quality of the metal is claimed to often be destroyed. The cost of production is several times that of a drop forged shaft. This shaft, as well as the connecting rods, is fitted with babbitted bearings, the babbitt resting on a grid of bronze within the journal. In the camshaft and wrist pins plain bronze is used.



Intake Side, Columbia Mark XLVI, 24-28 Horsepower Motor

The valve disposition in ports on the left is new with this concern, in that both sets are in the bottom of the ports and operated by a vertical lift instead of the lever motion within the crank case, as used on the present large car and on the last year's models. Valve stems and heads are integral forgings, made from special steel. The former work in the long sleeves H screwed into the bottom of the ports and the push rods work in sleeves B resting in openings in the top of the case and held therein by the yokes C, a construction permitting of quick removal of the rod and to facilitate valve removal small lugs are cast on the cylinder sides so that a lever can rest thereon for raising the seating of the valve spring while removing the pin that retains the seat in position. On the top of the push rod is the adjusting nut K for varying the valve lift. Cams on the shaft D are arranged in pairs.

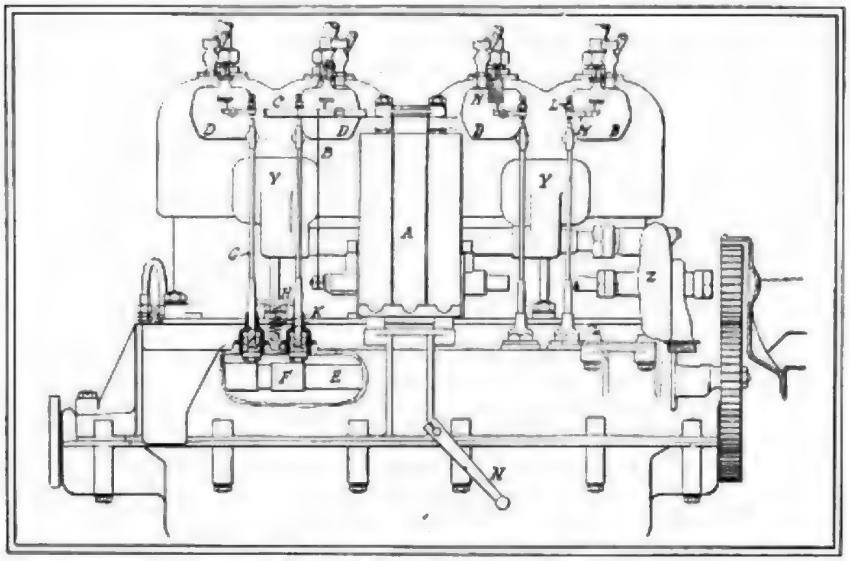
Exceptional simplicity is found in the disposition of the carbureter and in the intake and exhaust piping, the former, Q, carrying the carbureter P shown in outline and connecting by a single arm with

Digitized by Google

the pairs of cylinders and the latter B, carried above it is a horizontal tubing with a branch to each exhaust valve. Either set of valves can be removed through the screw caps F in the tops of the valves.

The carbureter is perhaps the most interesting feature of the motor in that it is entirely new and one that has under test increased the motor power considerably. It is of the float-feed aspirating type and has not any springs in its construction. There is not a needle, and what is more peculiar, no place for adjustment. The gasoline enters at the right and meets the primary air supply coming through a 1-inch pipe, drawing its supply from between the cylinders, but if desirable in cold weather a jacketed piping can be used for heating the incoming air. For increased speed additional air is supplied through an auxiliary opening at the bottom of the carbureter which consists of a series of small ports opened and closed by a sliding vertical barrel containing corresponding ports, which moves up and down as the motor requires more or less gas. This barrel is made of the required size and weight to offer the proper resistance to the suction of the motor as speed increases so as to rise slowly and open ports and then to drop back easily of its own weight immediately the motor speed decreases. The throttle is of the barrel type placed horizontally in the mixing chamber where the pipe to the motor leaves and it performs a throttling function. It is not in any way connected with the governor on the motor, but is actuated by a foot pedal on the toe board. A hand lever on a fixed quadrant on the steering column fixes and determines the speed which the governor is to maintain, the governor controlling a by-pass valve which it mechanically raises and lowers as the governor balls throw in or out.

Besides the new carbureter is the fitting of a low tension scheme of ignition with current supplied from a gear driven magneto A shown in the ignition side view of the motor. A single wire B conducts the current from the magneto armature to the bus bar C which has connections with the stationary electrode within the combustion chamber. A separate ignition cam shaft E with large cams F serves to

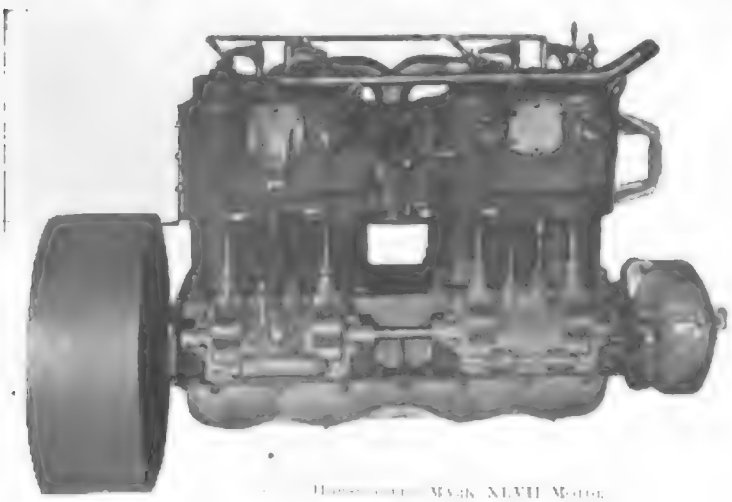


IGNITION SIDE MARK XLVI COLUMBIA MOTOR

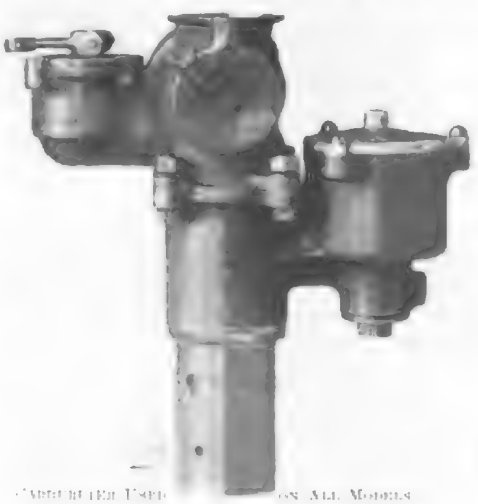
operate the make-and-break mechanism, which consists of a horizontal arm M carried on the igniter plate D. There is on one end of the arm an adjusting screw L against which works the head of the push rod G which is raised from the cam shaft and lowered through the use of coil spring K and a spring arm H, each end of which works in a slot in the push rod, one spring thus sufficing for both rods instead of the usual construction of a separate coil spring surrounding each rod. On the igniter plate a coil spring N serves to hold the movable electrode carried on the arm within the combustion chamber away from the stationary one so that no current flows. When the push rod G goes up the outer end of lever M is raised against the tension of the spring N and the two electrodes within the combustion chamber are brought together so that the circuit is completed and a current starts flowing. As soon as the revolution of the cam F permits of the push rod dropping the spring N separates the electrodes by raising the inner end of lever M. When the two electrodes separate the current tends to bridge the gap between them and leaps in the form of a short and very hot spark. In advancing or retarding the spark the cam shaft E is moved to the front or rear by the lever N connected to it through yoke and collar and as the cam F is not of the same size throughout, the timing of the spark is advanced or retarded.

Integral water jackets are used in cooling the cylinders, the jacket for each pair receiving its supply from the pump Z, gear-driven, and carried on the front of the motor through the openings Y. From the jackets water passes to the top of the radiator M through openings N in each cylinder head.

Lubrication is by continued oil circulation sustained by a rotary oil pump gear driven off the cam shaft. This pump with a capacity of 15 pounds pressure, forces oil from a reservoir S in the base of the crank case through a conduit which leads to the main crankshaft bearings, the camshaft bearings and the valve push rod guides. The oil in falling from these bearings into the crankcase is maintained at a fixed level by dams around the overflow pipes and in flooding these dams it overflows and returns to the reservoir S. Connecting rods are splash-lubricated by scoops and

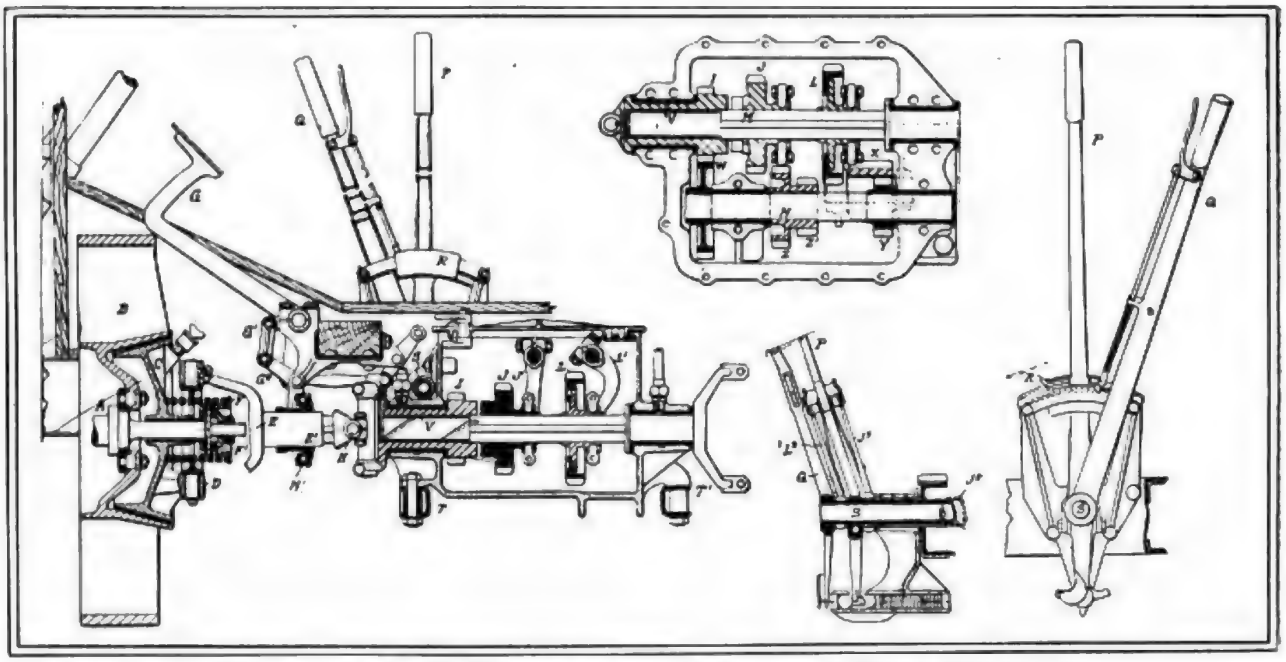


MARK XLVII MOTOR



CARBURETER USED ON ALL MODELS

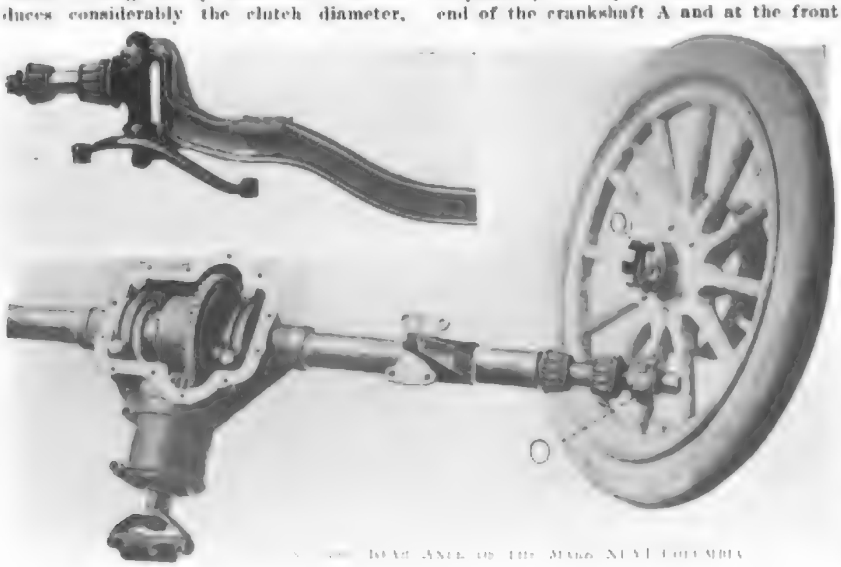
Digitized by Google



CLUTCH SIDE AND TOP SECTIONS OF GEAR BOX AND LEVER CONSTRUCTION IN COLUMBIA MARK XLVI CAR

the connecting rods work in diaphragms across the lower ends of the cylinders, preventing an excess of oil in them with the danger of fouling the make-and-break mechanism. An auxiliary oil tank with a capacity for 400 miles is hung to the frame of the car from which oil is piped to the crank case reservoir, from which it is distributed to the motor as before.

Columbia mark XLVI consists of four units: the motor one, gear set two, telescopic propeller shaft three and rear axle drive four, with cardan joints uniting the four units so that poor alignment between the motor and the rear axle is readily taken up. The clutch constituting the first part of the transmitting system is a small, external leather-faced cone one, with the male part C fitting within the fly wheel B, made with fan-like blades for drawing hot gases off from around the motor. Using the fly wheel as a fan reduces considerably the clutch diameter, which is compensated for by the extra wide friction faces of the two parts. Friction is further assisted by using small brass shoes in the leather facing, the shoes causing an easy and gradual engagement. A bearing for the male part C is furnished in the continuation of the crankshaft A, a suitable bushing being inserted. Rigid with the male part is the ring part D which at its periphery carries the cone-shaped covering E with its sleeve E1 which is a sliding fit over the short shaft K in turn united by universal joint with the hollow gear shaft V. This shaft has its bearing in the front of the gear case, and is made integral with the gear I, its rear end forming a bearing for the main shaft M of the gear set. Within the clutch casing E is the clutch spring resting at the rear on the cup-shaped piece F bearing against a ball thrust bearing held in place by the cap F1 screwed on to the end of the crankshaft A and at the front bearing directly on the part C of the clutch. The spring normally holds the clutch engaged and for disengagement the pedal G on being depressed works through the link connection G1 to the bell crank G2, the lower arm of the latter working with the clutch yoke H, which, with its race of end thrust balls, carries the sleeve E1 to the rear, withdrawing the male portion C.



REAR AXLE OF THE MARK XLVI COLUMBIA

Three-point suspension can be considered a novelty with the Columbia concern in the design of this model. In carrying the gear box on this system one support T at the center of the front end carries that part on a cross piece of the main frame and on a similar cross piece the rear end takes two supports, one at either corner, one of these being shown at T1. The case has the main shaft M and countershaft N in the same horizontal plane and it is divided in line with the bearings. In both shafts a special chrome-nickel steel is used, the elastic limit of which is placed by the maker at 135,000 pounds to the square inch and the tensile strength of which is 225,000 pounds to the square inch. Both shafts revolve on long phosphor bronze bearings supplied with oil from four individual oil cups, the cups carried at the right side of the car beneath the frame side piece.

Three speeds and one reverse are given, in the obtaining of which two sliding units are used. Both of these, J and L, are carried on the squared main shaft M, the former on the front end of the shaft, when moved to the front, locks with gear I for direct drive and when meshed with gear Z gives intermediate speed. For slow speed the shifting unit L is engaged with gear Z1 on the countershaft and in reversing this unit is moved back, engaging with the idler X, made with extra wide face, double the width of the other gears within the case, so that it can mesh with gear L on the main shaft and Y on the countershaft at the same time. When driving on direct

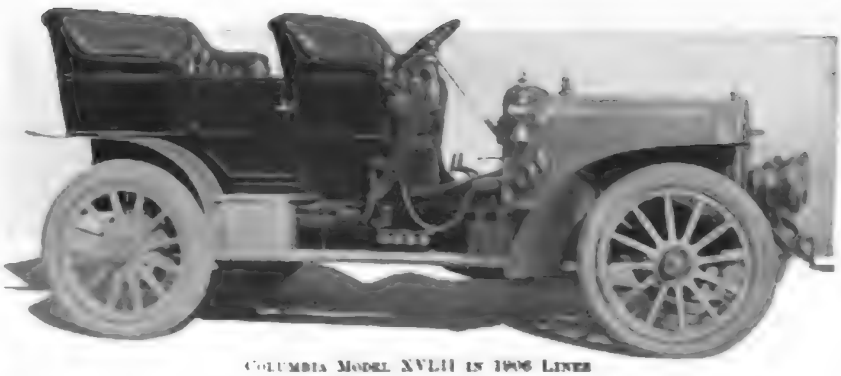
Digitized by Google

speed the countershaft revolves, the large gear W being in constant mesh with the small gear I on the sleeve V.

The movement of the sliding units J and L is through a single side lever P working in a double slotted quadrant R. This lever is pivoted on the shaft S which extends across the main frame with a bearing in each side piece and to it is keyed the emergency brake lever Q. In the cross section illustration it can be seen that the change speed lever P works between two short arms J3 and L3, each with a short lug at its upper end. These lugs are made to fit a slot in the lever so that moving the lever to the right or left locks it with them. The arms are fitted with a flat spring to hold them away from the lever P. The arm L3 is carried on a sleeve surrounding the brake lever rod S. Surrounding this sleeve is another sleeve J2 to which is connected the arm, J3. The inner end of the first sleeve connects by rods with the curved arm L1 within the gear box, which is yoked to the shifting unit L. In a similar manner the sleeve J2 is connected through the arm J1 with the sliding gear J. In moving the arms L3 and J3 the lever P is moved to the right or left when it locks with the arms. When moved to the front or rear it carries the arms with it. On the bottom of the lever is a depending arm with sector resting between a pair of balls one held against the sector by a coil spring. When the lever P is opposite the gate in the quadrant this spring will tend to hold it in the gate in a neutral position, so that the lever is always ready for any of the four speeds.

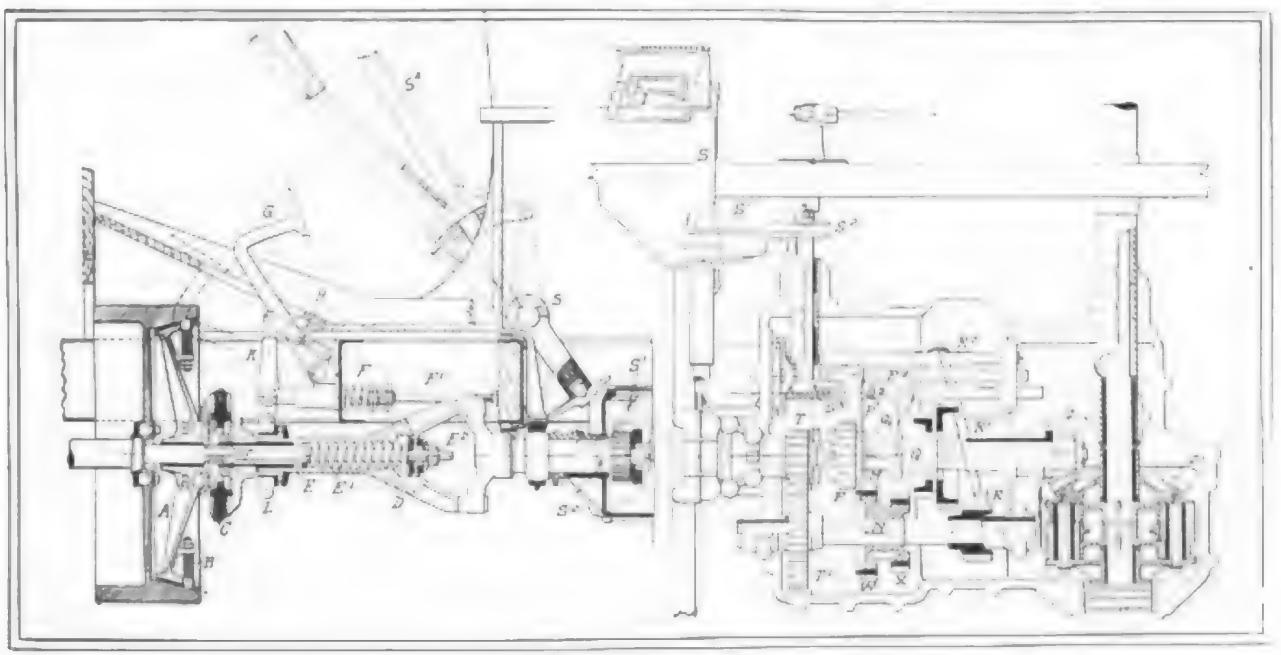
The telescope shaft coupling the gear box with the live rear axle is of typical construction throughout and has the pinion on its rear end contained in a housing, forming a part of that for the spur gear differential. Accessibility to the gears is made possible by splitting the housing horizontally above the bearings, the top part being above the axle bearings. The axle drive shafts are carried within a tubular housing, which carries all of the weight of the car, the drive shafts only being subjected to driving strain. The housing sleeves extend through the hubs of the road wheels and carry a couple of cages of roller bearings on which the wheel revolves. On the outer end of each drive shaft is a heavy cap O with large teeth or dogs which mesh with similar dogs on the outer face O1 of the steel hub of the road wheel, thereby locking the wheel with the shaft. A suitable hub cap covers the interlocking teeth on the hub and shaft and holds the wheel in position. Within all parts of this axle except where end thrust is reckoned with, Timken roller bearings are used, the end thrust bearing being of the Hess-Bright ball type.

Hubs of the rear wheels carry the regular and emergency brakes, the former being external bands tightened on the cast steel drums through a pedal and the later of the expanding type work within the drums and take the form of cast steel shoes forced against the interior of the drum in the usual manner and connected with the lever at the driver's right by rocker shaft and steel wire cables. The brake drums are bolted to the wheel hubs.



COLUMBIA MODEL XVLII IN 1906 LINES

Mark XLVII, the present large touring car, retains its present style of motor which consists of two pairs of 5 by 5-inch cylinders, giving its rating at a crankshaft speed of 800 revolutions with a flexibility ranging between 150 and 1,500 revolution. Valve actuation is the same as this year, the inlets being in the top of the ports and opened by vertical push rods with arms resting on the tops of the valve stems. Within the crankcase is a cam lever which pulls the push rod down, but in the case of the exhausts a similar lever serves to raise the push rod, thus opening the valves which are located in the bottom of the valve ports. The breech-lock method of retaining the spark plugs is still in vogue and the commutator is driven off the camshaft. Jump spark ignition, with current from storage cells, conducted through a four-vibrator coil carried on the dash, is retained. The body lines are slightly altered by a hollow metal dash, a Mercedes bonnet and the placing of the emergency brake lever further back and beside the change speed lever. Both brakes are still interconnected with the clutch. The rear body lines are much the same except that the seat arms



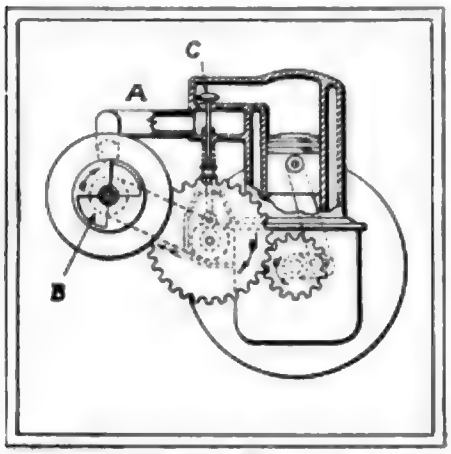
CLUTCH AND GEAR BOX ASSEMBLY IN 40-45 HORSEPOWER COLUMBIA CAR

Digitized by Google

are lower. The diameter of the road wheels is increased to 36 inches.

The transmission of power from the motor fly wheel to the rear hubs in the big Columbia car remains practically the same as at present with the exception of the placing of a universal joint between the clutch and gear box, to take up any differences of alignment between the crank and gear shafts and in the increasing of the bearings within the case. Contrary to the practice followed by many, the maker has not adopted ball bearings within the case, long plain journals with a bronze lining being used. A four-speed and reverse gear set with double chain drive to the road wheels, remains.

Two springs are used in engaging the cone clutch used in this model. Unlike



WEISS MUFFLER, VALVE IN END

in the new car, the clutch diameter is practically the same as that of the fly wheel. For ease in engaging, the male portion A carries the brass shoes within the leather lining, each being forced outward by the springs shown at B. The double spring scheme consists of the main spring E1 within the sleeve-like housing D which has spreading arms to connect with a short shaft to the gear case. The spring is retained on a small shaft E2 by a ball thrust against which it bears and in the front it rests on a sleeve bearing upon the collar E on the sleeve D. The second spring F, a much smaller one, is carried on the rod F1 fastened at the back end to a cross piece of the frame and in front pivoted to the arm K connected with the clutch pedal through the adjustable arm H and the pedal G. A downward movement of the pedal carries the arm H to the front and with it the top part of the arm K, the bottom portion traveling slightly to the rear. With the first pressure on the pedal the spring F is compressed and then the forward end of the rod F1 acts as a pivot, a further movement of the pedal carrying the thrust collar L to the rear and withdrawing the clutch part A. While this is the action of the spring in engaging, its important part is played when the clutch is engaging, it then serving to resist the quick forward movement of the main spring and so correspondingly retards engagement with a similar lack of jerk being transmitted to the gear set and road wheels.

Within the gear box new chrome-nickel gears of wide face have been fitted. The tensile and elastic strength of these gears are the same as in the smaller model. In getting the five speeds—four ahead and a reverse—three sliding units, all carried on the squared main shaft M are used. Each sliding unit has not to pass through gears in going from one speed to another, making it possible to drop from direct drive to reverse or into any of the forward speeds. One lever gives the five speeds, working in a three-slot quadrant I, the middle slot being for first and second speeds ahead, the inside one for third speed and direct drive and the outside slot for reversing. Should direct drive be needed the unit P is moved to the front, locking with the gear T on the shaft from the clutch, the gear being moved through the arm P1, in turn attached at its outer end to the shafting rod P2. In direct drive the rod P2 must be carried to the front which is done by having the front end on top made as a toothed rack in which meshes a pinion S3 carried on a cross arm with a bearing in the side of the gear box. This carries on its outer end the flanged sector S2. With this sector meshes a rack S1 on the bottom of the change speed lever S4. This lever has a long bearing in the sleeve S carried crosswise on the main frame pieces, so that if the lever is placed in the central slot of the quadrant the sleeve S is carried with it, as is the sector S2 and the pinion S3, so that the pinion T slides into the rack on shaft P2 and as it is rotated carries the rod to the front or rear, thus shifting the gear P.

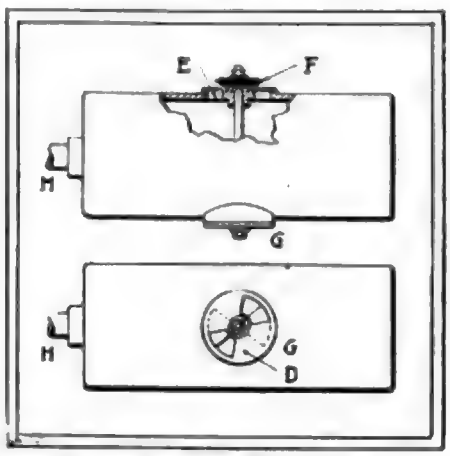
A backward movement of the shifting rod P2 meshes the gear P with gear W on the countershaft for third speed ahead. For second and slow speeds the unit Q with its two gears is moved to the front and rear, respectively, its front and rear gear meshing with corresponding gears on the countershaft. In reversing the idler R on a shaft in the bottom of the case is moved by the arm R1 connected with the shifting rod R2. Both shifting rods R2 and Q2 are made with racks on their forward ends and with these can be meshed the pinion T the same as on direct drive. A locking device is attached which prevents more than one of the shifting rods P2 R2 and Q2 being moved at the same time. In the rear part of the gear box is the spur gear differential carried on the jackshaft with its sprockets for side chain drive. The bevel pinion Z on the main shaft as well as the large bevel Z1 on the differential are protected from end thrust by races of ball bearings.

In the running gear nickel axles are used in front as rear, both being of I-section, and having integral spring seatings. Full elliptic springs carry the rear of the frame, as at present, and long semi-elliptics support the front. Four-inch tires encircle the front wheels and 4½-inch sizes are used on the driving wheels.

WEISS MUFFLER

A novelty in muffler construction has been brought out by L. T. Weiss, of Brooklyn, N. Y., valves in it being opened and closed regularly with relation to the exhaust valve in the motor, the valves in the muffler being operated directly from the camshaft. The muffler is a large cylindrical chamber without baffle plates, perforated tubes, metal partitions or other regular muffler features inside, there being nothing but one large chamber into which the exhaust gases pass direct from the motor through very large exhaust piping. The muffler capacity is generally five times that of the cylinder capacity of the motor. In attaching it to a vertical motor the connections are as shown in the combined motor and muffler illustration, where the exhaust pipe A enters the top of the muffler near the center, the muffler being carried lengthwise. In the muffler end is the rotary valve belt driven from the camshaft, through which the gases pass to the atmosphere. The valve is so timed that it is closed when the exhaust valve from the cylinder opens, thus allowing the exhausted gases to expand within the chamber. As soon as the motor exhaust valve closes the valve B out of the muffler is opened and the expanded gases are given free passage out. The inventor in this arrangement claims to do away with back pressure by having a chamber five times the cylinder capacity for the hot gases to expand and cool in, there not being any dividing plates within the chamber to hinder the expansion. Silence is obtained by confining the gases in this manner and then, when partly cooled, letting them gradually exit. The exit valve takes the form of a double ventilator in the center of the muffler end, there being a pair of fan-like openings and revolving fan-like metal blades for covering the openings and for revolving. The former is a small wheel on the fan hub, connected by round belt with the camshaft.

Where the car design does not permit



WEISS MUFFLER, VALVE IN SIDE

of this arrangement the exhaust from the motor can be made to enter at either of the muffler ends and the exit valve placed in the center of the sides at D and G with the motor in either case connected at H. In this design the valve openings can be seen at E and the wheel for driving from the camshaft shown at F, which can be either on the top or lower side of the chamber. The pipings from the motor are generally twice the diameter of the exhaust valve, so that as free movement as can be is given the heated gases.

The manufacturer has had this muffler under constant test on different makes of cars for several months and claims that back pressure is not found, that the gases quickly cool and expand in the chamber and that the valve action is reliable.

Digitized by Google

A SMACKING QUESTION

Place Unknown—Editor MOTOR AGE—I own an automobile; heretofore I kept a horse and buggy. The old custom was that when a man took a young woman out driving he could collect a kiss as toll for each bridge he crossed. Does this custom hold with the automobile? A man used to get one kiss per bridge on a one-horse-and-buggy proposition. Can he now collect as many kisses for a bridge as his machine has horsepower?—ANXIOUS READER.

An answer to this question required such delicate handling that it was deemd best on the part of the editorial department to submit the case to the young women employed by MOTOR AGE and to abide by their decision. When the letter was read and a vote taken there was no indecision about the matter; it was a unanimous vote in the affirmative, with the suggestion added that it was not only permissible but highly desirable that the operator of the automobile should secure all the smacks he possibly could. Possibly the young women's decision was based upon a little Minnesota episode a year ago. In this case a motorist drove his machine into a livery barn for the night. The liveryman admired the machine and the owner of the automobile, being a well satisfied person, boosted the car's power from 12 to 24 horsepower. The liveryman said nothing, but continued his laudations of the motor car. In the morning, when the automobilist asked for his bill, he was confronted with a $12 charge, the liveryman explaining that he always charged 50 cents for keeping one horse and as this was a 24-horsepower car the bill would be $12.

ROLLERS ON PUSH RODS

Fort Wayne, Ind.—Editor MOTOR AGE—The majority of the cars on which I have had to do a little repairing are fitted with small rollers on the bottom of the push rods which operate the mechanical valves. The cams strike upon these rollers when working the valves. Some motors, however, have push rods with curved shoes on the bottom instead of the rollers, the degree of the curve being found by experiment. Which of the two constructions is better and what are the advantages and disadvantages? In either case why is the camshaft not placed directly beneath the push rod?—A. T.

The roller type is now considered preferable, as in this construction the friction is reduced to a minimum. The roller on its down stroke leaves the high point of the cam, allowing the valve to seat at a higher rate of speed than when opening, thus permitting the valve to seat immediately after the inspiration stroke of the piston. The curved shoe undoubtedly permits a more gradual descent of the valve, although the closing of the valve can be done in the same time as in the roller type. There are various reasons why the camshaft is not placed directly under the valve stem; for instance, the space required for the camshaft bearings may be farther from the center of the cylinder than the inlet valves, which are placed as near the center of the cylinder as possible to obtain the full force of the explosion over the piston.

FREEZING OF GENERATORS

West Salem, Wis.—Editor MOTOR AGE—Will you tell me of some way to prevent the water from freezing in the carbide generator? Is there anything that can be placed in the water to prevent its freezing without affecting the carbide?—W. L. MCELBOWNEY.

Place the carbide generator as near the exhaust pipe as possible. If not convenient to do this, run a few coils of pipe from the exhaust around the generator; or put the generator into another specially constructed can, leaving a small space all around, and introduce into this the exhaust, with an outlet on the opposite side. In some cases the heat generated by the gas is sufficient to keep the water from freezing. Experiments conducted by putting chemicals into the water have wrought havoc with the soldering in the generators.

INDEPENDENT VIBRATORS

Audubon, Ia.—Editor MOTOR AGE: Will you inform me through the Readers' Clearing House where I can obtain an independent vibrator to use on a plain jump spark coil? Also give small drawing showing how to wire it correctly.—C. L. Hoover.

MOTOR AGE respectfully refers the writer to any of the well known coil-making concerns, most of which are carrying advertisements in the columns of the MOTOR AGE.

EFFECTS OF CALCIUM CHLORIDE

Chicago, Ill.—Editor MOTOR AGE—We call your attention to the article which appeared in the November issue of the Autocar on non-freezing solution, which is about as far from the facts as any article can possibly be. The writer is correct in stating that substances dissolved in water lower the freezing point. He also implies that calcium chloride when reduced by a chemical works from a liquid to a solid and placed on sale to motor companies is a very expensive proposition, which is not the case, either here or in England, as material can be bought in 700 or 800-pound drums at 1 cent per pound. He states that calcium chloride gives off hydroflourie acid—which is muriatic acid—which is absolutely incorrect. He also speaks about the solution becoming concentrated through dryness, chemically an impossibility except where the solution is boiled, as no ordinary evaporation will allow the solution to become weaker than 24 degrees Baume, which contains about 4 pounds of calcium chloride to a gallon and is a thin solution. He states that calcium chloride will crystalize out when the solution becomes concentrated, an absolute misstatement. There is no way of crystalizing the chloride until the water is driven off by heat. It seems he recommends glycerine, which is a product containing a large amount of sulphuric acid. The inside of a can which has contained glycerine for 30 or 60 days will show that the sulphuric acid has eaten through the tin plating and has caused corrosion. That is one reason why all the railroads have thrown it out of use for switches.—JAMES H. RHODES & CO.

GASOLINE AND OIL

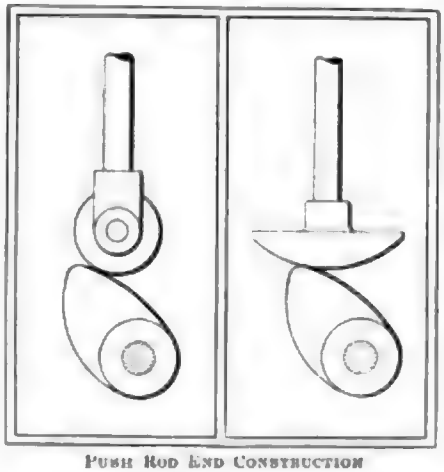
Brooklyn, Ia.—Editor MOTOR AGE—What test of gasoline is best for cold weather, 68, 74 or 88? Would it do to mix the 68 and 88, or is it better to use either one or the other separately? Would it be any help to cover the pipes that lead from the carbureter to the cylinders with asbestos to keep the cold air away and would it help to cover the carbureter? If calcium chloride is used to prevent freezing, will it leave any deposit on the cylinders or pipes of the radiator if it is filtered properly? Which is the best grease to use in the transmission—hard oil, graphite or heavy cylinder oil?—READER.

A 76 test is considered good gasoline to use for all ordinary automobile purposes. It would be advantageous to have induction pipes covered in cold weather to prevent them from freezing. Practically no deposit will be left in cylinders or pipes if calcium chloride is filtered before using. At 5 or 6 degrees below zero glycerine becomes a pasty mass, but soon liquifies after the motor has been running a few minutes. A heavy oil is preferable in the transmission, as the splashing of oil insures a good lubrication to all moving parts.

HOT AND COLD RIVETING

Nashville, Tenn.—Editor MOTOR AGE—Which is better, hot or cold riveting in the frame work of a chassis, and what are the merits advanced for each method?—G. D.

This topic was covered in MOTOR AGE in the issues of October 26 and November 9.

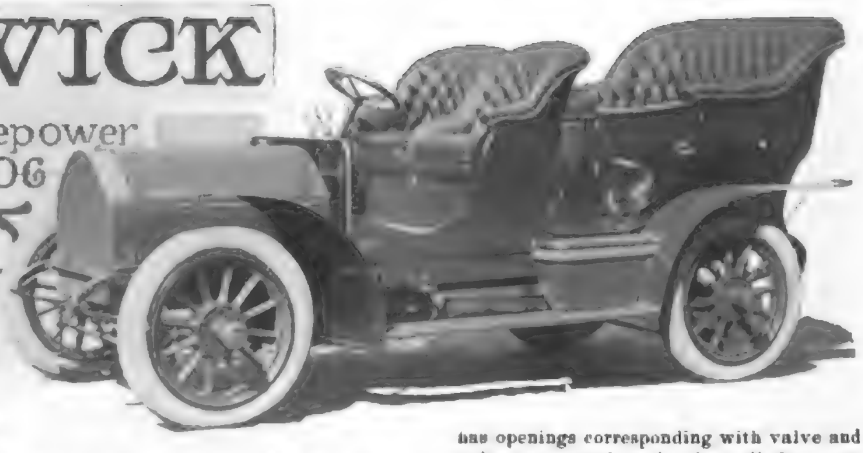


PUSH ROD END CONSTRUCTION

Digitized by Google

CHADWICK

45-50 Horsepower Car for 1906

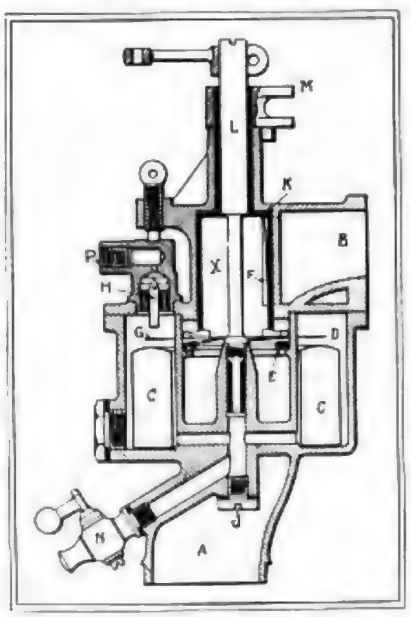


COPPER water jackets for each pair of cylinders, water governor for the carbureter throttle, compensating ball bearings in the road wheels and end bearing of the jackshaft, four-speed ahead sliding gear transmission, with a double set of bevels driving to the differential on the jackshaft in the rear of the gear box, and automatic carbureter are the leading features in the 40 to 50-horsepower Chadwick touring car for 1906. Its maker, the Fairmount Engineering Works, of Philadelphia, retains such present features as double chain drive, cone clutch and tubular suspension of the gear box. The body and running gear follow general lines in construction. Pressed steel of channel section is used throughout in the frame parts and simplicity is aimed at in dispensing with a subframe, the motor lugs being made sufficiently long to rest direct on the frame pieces. Cross members carry the gear box and other parts. Extremely long half-elliptic springs carry the body front and rear and with both sets are long Mercedes-like curved spring hangers. A further touch of the Daimler lines is in the radiator and hood. Thirty-four-inch wheels carrying 4½-inch tires are fitted front and rear, the thread is standard, the wheel base 108 inches and the weight approximately 2,700 pounds, with body equipment.

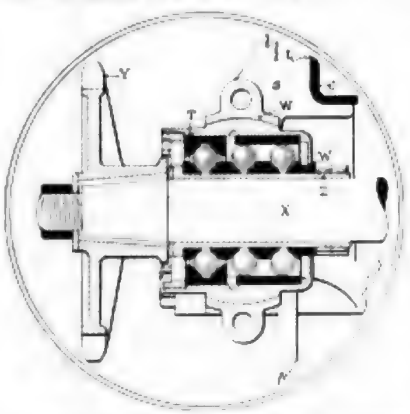
Easy body lines rule throughout; the individual front seats have fairly high backs with a rearward curve at the top; the side entrances are wide and surrounded with scroll-like design and the back of the car has a forward curve from the frame up to the bottom of the seat, when it becomes a medium rear curve ending at the top of the seat. Broad fenders, running board and straight dash are other points in the body work.

From 40 to 50 horsepower is generated by the Chadwick motor, which is of the vertical four-cylinder variety, with cylinders cast in pairs, each pair being water jacketed by a single copper jacket. The bore and stroke are 5 and 6 inches respectively. The pairs of cylinders B are made with a common base by which they are secured to the crank case. They also have a common flange C over which fits the bottom of the water jacket. The jacket takes the form of a copper water pail with straight sides. When attached it is inverted with the top resting on the flange C. To retain it in position a tight-fitting ring is slipped over the jacket and pressed over that part of the jacket enclosing the flange, thus producing a tight union. The cylinder casting is made with the inlet and exhaust valve ports of sufficient length to extend practically to the jacket walls. Similar construction is used in the valve caps E and F, through which the inlets and exhausts can be taken out. The jacket for each pair of cylinders is pressed out of a sheet of copper, being without seams or joints of any kind and has openings corresponding with valve and valve cap openings in the cylinder castings. Glands are used at the various ports in the jacket to make water-tight joints. None of the camshaft gears on the front end of the motor is enclosed within the crank case as in the smaller model, but they are made with wide faces to reduce noise. The valves are carried in separate ports at the opposite sides, the inlets at the right and exhausts opposite the push rod sleeves D are made integral with the cylinder castings. Both sets of valves are interchangeable, having a diameter of 2¼ inches and with either set the lift is 15/16 inch. Nickel is used in the exhausts and nickel steel in the intakes. The carbureter M is carried close to the motor and connects through the pipings N with the valves. On the front end is the water pump G supported on a bracket H. The water circuit is standard, the pump taking its supply from the bottom of the radiator and delivering it by way of the pipings K to the bottom of the water jackets. The exit from them is through the top to the top of the radiator. Ignition is by jump spark, with current from storage or dry cells distributed through a commutator L carried on a vertical shaft at the rear of the motor and driven by bevels off the camshaft. It is made from bronze with contact points of pure copper, fiber and mica serving in the insulation. A feature of it is that the stationary contacts are held toward the revolving one by coil springs and that any one of them can be withdrawn from the outside of the case in succession for testing cylinders.

The Chadwick carbureter is compact in every detail, is readily accessible and is constructed along the lines of modern tendencies with a ring float C within the chamber D and a spraying nozzle J in the center of the float, so that the level of gasoline in the nozzle is the same at all times as its level in the float chamber. The mixing chamber X is a vertical cylindrical space surrounded by the barrel throttle K which has a port shown at F for admitting mixture through the passage B to the cylinders. It is manipulated through the short yoke lever M with the water governor on the motor. A feature of the carbureter is that at the bottom of the mixing chamber is an automatic shutter E which works in connection with the throttle so that when the throttle is turned cutting off part of the supply to the cylinders this shutter is moved. The air pas-



CARBURETER WITH ITS RING FLOAT

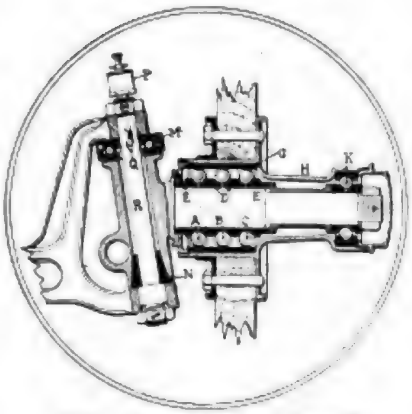


COMPENSATING BALL BEARINGS OF JACKSHAFT

Digitized by Google

age around the spraying nozzle is limited, so that the suction past the nozzle is slight. When the throttle is wide open the shutter E is also wide open, thus giving free passage to the incoming air through the passage A. When it passes the nozzle in this way it lessens the suction at the nozzle, not drawing so much gasoline out as it would if the opening was at the same size for all motor speeds. This device has the claim advanced for it by its maker that with fast motor speeds too rich mixtures are not obtained and on slow speeds a sufficient quantity of gasoline is sucked in to give a powerful stroke. The spraying nozzle J is adjustable and its top or spraying part is made so that the gasoline has to exit through openings in which the fuel passes a short sharp angle in the passage, serving to break it up and facilitate its mixing with the air. The flow through the nozzle is controlled from the top through the gasoline adjusting screw L carrying an arm for adjusting it and at its lower end resting in the head of the nozzle so that raising or lowering the screw increases or decreases the fuel flow. Gasoline enters from the fuel tank by way of the passage P, its free flow being under the control of the short pencil-like valve H, with the pointed part uppermost and fitting in the conical part of the entrance pipe. The valve normally remains open because of its own weight but is closed through the medium of a lifter rod G carried horizontally in the top of the float chamber and which when raised by the float bears upward on the valve H. A stop cock N connects by separate passage with the entrance to the spraying nozzle and through it the fuel in the nozzle and float chamber can be drained off.

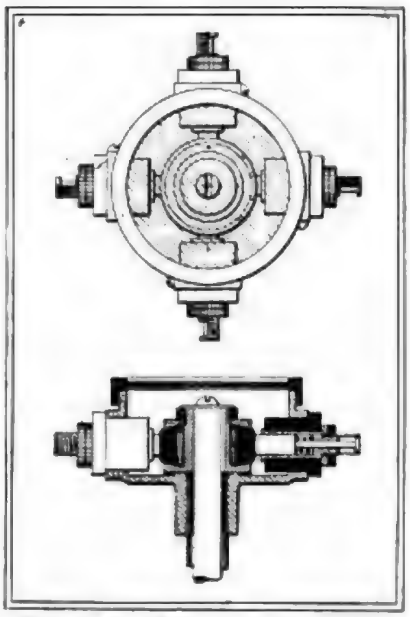
Chadwick ball bearings in the road wheels and the ends of the jackshaft are illustrated. Their peculiarity lies in the designing of the cones to accomplish a compensating action so that when the balls are slightly worn in one race the cones automatically adjust themselves. In the wheel bearings three balls races A, B and C are used and on the axle are four loosely mounted cones, two with double



BALL BEARINGS IN ROAD WHEELS

cone faces as shown at D and separating the race of balls B from the races A and C, and two end cones E with a single face for retaining the races A and C in position. All of these cones, being loose on the shaft, it is apparent that should balls in the race A become worn, the balls in the races B and C will force the cones D in the direction of the race A. The pressure on all three races is equalized as it was before the wearing took place. A steel ring or sleeve G rests within the hub H and against it all three sets of balls bear, it forming, in fact, the bearing surface of the hub. In the outer end of the hub is a single ball race K, the balls of the four-point support variety with adjustment within the hub cap. Bearings in the steering knuckle are balls on top and a plain conical bushing N at the base. The balls M in the top are protected in a dust-proof case and work between irregular shaped cups, with two bearing points in each. On the top of the knuckle axle R is an individual oiler P from which lubricant is conducted down a bore in the top part of the axle as far as the opening Q where the oil flows to the balls forming the bearing.

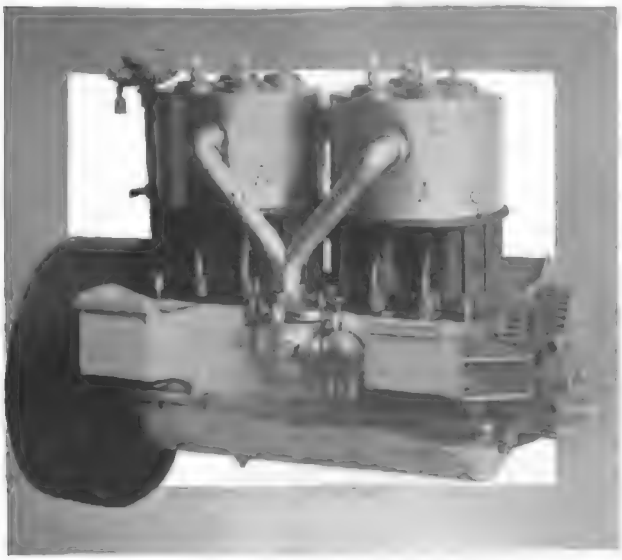
The bearings on the ends of the jackshaft, shown in another illustration, differ slightly in that the outer race of balls is



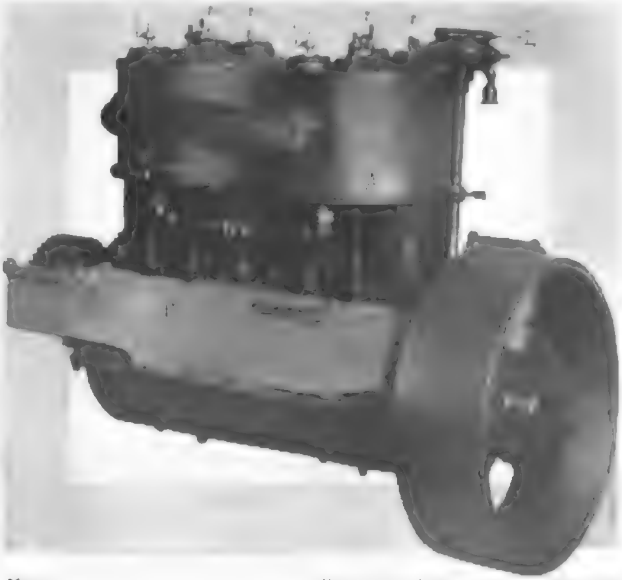
TOP AND SIDE SECTIONS OF COMMUTATOR

retained by a cup ring T, whereas the other two races bear directly on a steel sleeve within the hub. The compensating feature is used but the cones instead of resting directly on the jackshaft X, are loose on a bushing Z surrounding the shaft, the bushing screwing into the shaft housing at the inside and having a collar at its outer end for retaining the outer bearing cone in position. The sprocket Y is fitted to the shaft, with a taper and at J is shown a section of the side piece of the frame to which is attached the bracket S carrying the shaft. It can be noted that this bracket has a ball joint bearing shown at W with the case carrying the shaft bearings so that torsions of the frame do not result in misalignment of the shaft.

The water governor acting directly on the carbureter throttle is of the type used for some time on many foreign machines and has been in use for some time on Chadwick machines. It works on the



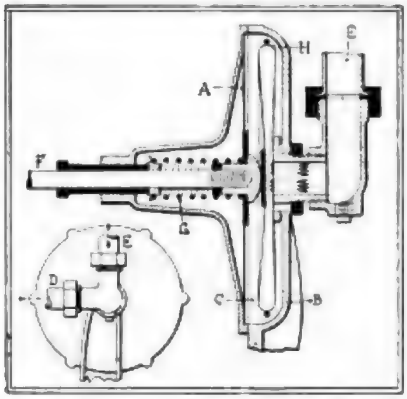
INLET SIDE SHOWING CARBURETER



CHADWICK MOTOR

EXHAUST SIDE AND COMMUTATOR

Digitized by Google



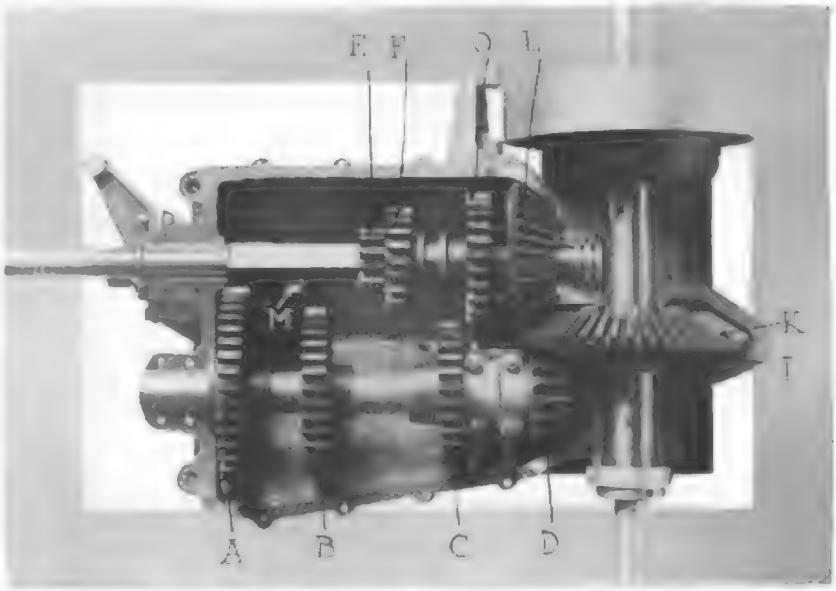
CHADWICK WATER GOVERNOR

principle that pressure in the water system is in direct proportion to the speed of the motor: With fast speed pressure is increased in one and all parts of the system; with a dropping of the speed the pressure falls. In putting this into effect the maker places a pump-like casing B in the water system, having water enter the front of it through the opening D and exit by way of E. The feature part within the casing is the light copper diaphragm A equal in diameter to that of the casing. It is so located that water pressure can only bear upon one side of it. A coil spring G on the opposite side, and surrounding the rod F, to which the diaphragm is attached, tends to resist the water pressure. This rod F connects with the carbureter throttle. At normal speeds the tension of the spring and that of the water pressure are so adjusted that the throttle allows sufficient mixtures to pass to the inlet valves but with the motor speeding the water pressure exceeds the tension of the spring and the throttle rod is moved in the direction of the spring, thus closing the throttle. On the water side of the diaphragm is a scroll spring H with a center block bearing direct on the end of the rod F and serving to keep the diaphragm in its proper position so that water cannot get on the same side of it as the coil spring.

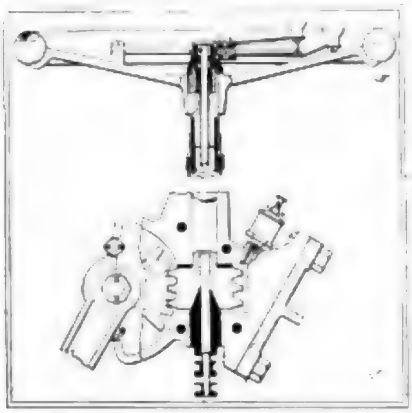
Flexible connection between the motor and the sliding gear set is by a cone clutch 17 inches in diameter with the cone constructed from aluminum and fitted with light springs placed under the forward edge of the clutch pedal to prevent a too rapid and jarring engagement. The female portion, also of aluminum, is fastened to a rocking center made from hardened steel which allows of the clutch rocking in any direction without straining the arms. All of the working parts are made from hardened steel and engagement is by yoke, with special ball bearings for taking strain off the crankshaft.

In the gear box four forward speeds and a reverse are gained, the high speed being direct. As in most side chain driven machines, the differential gearing is housed in the rear part of the case. A novelty is met with in the bevels attached to the differential. There are two, one K facing the right and meshing with a bevel pinion L on the rear end of the main shaft of the case and another backing it and constantly in mesh with a pinion D on the end of the countershaft. In this construction on direct drive the power is brought direct from the clutch-shaft, which is continued through the gear box and carries the sliding unit composed of gears E and F and also the sliding gear O. This gear O has on its rear side dental clutch teeth that are made to mesh with similar teeth on the front side of the bevel L. This bevel, it must be understood, is not on the same shaft as the gear O, but the shafts carrying the two gears abut within the gear L, which is carried on a hollow shaft for this purpose. When gears O and L are thus locked the drive is direct through the bevels L and K. The latter is on the jackshaft from which double side chains connect with the road wheels. For all other speeds the drive is first transferred from the main shaft to the countershaft, but not back again to the main shaft, the drive from the countershaft being through the bevels D and I to the jackshaft. This feature is advanced by the maker as the merit of the gear box and it is only made possible by using the double set of bevel gears to transmit to the jackshaft. To obtain first or slow speed the gear E is thrown back into mesh with gear A, the reverse pinion M being at the same time slid into the barrel which receives it, the arrangement of throwing it out being contained in the shifting rod so that there is no possibility of getting two pairs of gear in mesh at once. With gears E and A meshed the drive is through the bevels D and I to the jackshaft. In second speed gear F is meshed with B and the drive is through the bevels D and I and in third speed the gear O is meshed with C when the power is transmitted through the same set of bevels, the bevels L and K being only used in direct drive but remaining in mesh and revolving on all other speeds.

In changing speeds only one lever is required. It operates through a notched quadrant for all the forward speed, but to get the reverse the lever is brought to the normal position and then rocked inward toward the driver, making it impossible for him to accidentally reverse. The gear box is mounted on steel cross tubes in such a manner that the case is free to float with the frame, with the latter in any position. The reduction from the jackshaft to the road wheels is by sprockets with twenty-two teeth on the jackshaft and those on the rear hubs having thirty-four. Two sets of brakes are fitted. Those for regular use are carried on the jackshaft and are pedal-applied. Within drums on the rear hubs are the emergency brakes, which take the form of metal-to-metal ones, with the expanding shoes operated through toggle-joint construction and connected through an equalizer with a lever on the driver's right.



CHADWICK FOUR-SPEED GEAR SET WITH DOUBLE DIFFERENTIAL BEVELS



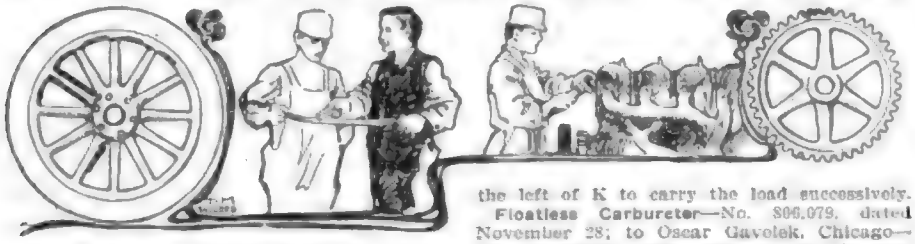
CHADWICK STEERING COLUMN

GARLICK PROP

The Garlick Auto Prop Co., of Paterson, N. J., is now putting on the market the Garlick prop. This device is to raise a car from the ground while not in use to relieve the wear of the tires from constant pressure on the floor. The prop is made in two styles, one of which is adjustable.

Digitized by Google

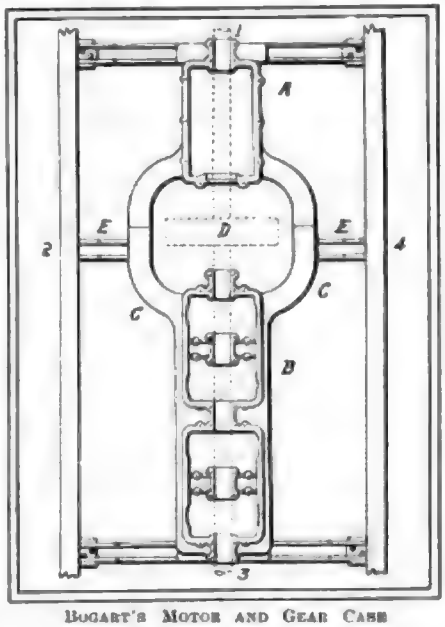
Current Automobile Patents



Motor and Gear Box Suspension—No. 805,442, dated November 28; to Fred H. Bogart, New Britain, Conn.—In order to carry the crank case and transmission gear box as a unit the inventor has the first casting A united with the casting B through a pair of curved arms C, the curvature of the arms being sufficient to allow the fly wheel B being carried between them. By this arrangement four points of suspension, 1, 2, 3 and 4, corresponding to the angles of a diamond shown by the dotted lines, are obtained. The supports 1 and 3 are direct on cross pieces of the main frame, being equidistant from the side pieces of the frame. The support points, 2 and 4, are directly on the side pieces, short dropped arms E serving as supports at the center of the curved arms C. If a line be drawn from the bearing point of the right front wheel to that of the left rear wheel and a similar line from the bearing of the left front wheel to that of the rear right, these lines will be respectively parallel to the opposite sides of the diamond, marking the support of the motor and gear case, so that in case a front wheel passes over an obstruction, the strain acts in the direction of a line passing through the center of the diamond.

Spring Road Wheel—No. 805,673, dated November 28; to George Schram, Detroit, Mich.—In his construction of a spring wheel, which is intended to serve the same purpose as pneumatic tires, the inventor has produced a wheel lacking in those clumsy features so common with most spring wheels. Each of the twelve spokes A rest within a V-shaped socket in the hub F, the bottom of the spoke being pointed at B to fit easily within the socket. In each socket is a coil spring C resting against a metal ring in the hub and with its outer end within a seating in the spoke A. It is through these springs that resiliency is obtained. On the outer end of each spoke is a cap portion D with eye hole, the eye hole part being clamped between the two parts of the wheel rim and the bolt passing through the eye hole, holding the rim parts together as well as retaining the spoke in position. A solid rubber tire E is clamped in position between the rings H, the latter being held to the wheel by cross bolts. The coil spring within the spoke K is called upon to bear the brunt of the load with the wheel in the position shown, at which time the spring in the spoke L is not carrying any of the load. As the wheel revolves, the spokes, in order to the left of K to carry the load successively.

Floatless Carbureter—No. 806,079, dated November 28; to Oscar Gavolek, Chicago—The inventor's carbureter, of the floatless type, controls the flow of gasoline into the mixing chamber by means of a check valve which closes the top of the spraying nozzle. The mixing chamber is a vertical tube, with air entering at the lower end, the mixture passing to the motor from the top. Midway



BOGART'S MOTOR AND GEAR CASE

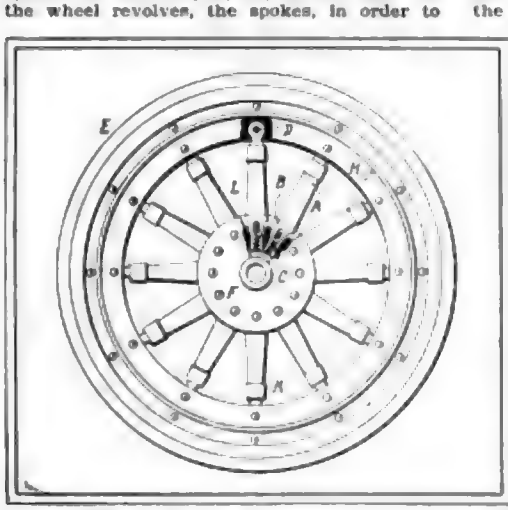
between the top and bottom is the mixing chamber, in the center of which is the vertical spraying nozzle. Suspended from the top of the mixing chamber is the check valve. On the valve stem is a diaphragm nearly equal in diameter to that of the mixing chamber. Bearing against the top of the diaphragm is a coil spring, having a downward tension and holding the check valve within the spraying nozzle, thereby preventing the flow of gasoline. With the first motor suction, the current of air drawn through the carbureter, striking the lower surface of the diaphragm, raises it against the tension of the spring. With it is raised the check valve, thus permitting the flow of the gasoline through the spraying nozzle.

Piston Igniter—No. 805,790, dated November 28; to Benjamin G. Gilbough, Chicago—A novelty is offered in the inventor's igniter or spark plug for a gasoline engine. In most respects the igniter follows standard principles in that the spark jumps between a pair of electrodes, one, A, known as the stationary one and carried in the cylinder head, and the other, B, an oscillating member in the spark plug proper. The latter is oscillated by being pivoted to a piston C in which is a threaded portion E, through which the electrode B passes. As the gases in the cylinder expand, owing to the explosion, the pressure raises the piston C against the tension of the spring D and the portion E, being threaded, revolves with the upward movement of the piston, the revolution serving to rotate the electrode B. After the explosion the electrode is returned to its normal position by the spring D.

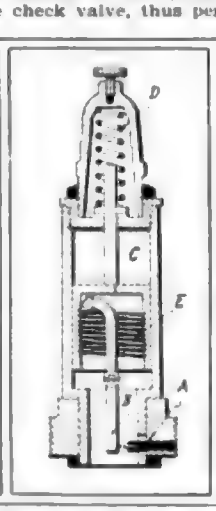
Live Rear Axle—No. 805,740, dated November 28; to William D. Lowe, Columbus, O.—In Lowe's rear axle construction a bevel gear differential is carried in a central housing, around which is bolted a sprocket for single chain drive from the gear box of the automobile. The differential housing consists of two parts, with flanges for receiving the axle housing, within which are the drive shafts to each wheel. The shafts, instead of being squared at the inner ends, where they carry the bevel pinions, are round and the pinions mounted loosely thereon, but at the shaft ends is a cubical block in the center of the differential. This block serves to lock the bevels with the shaft, the construction eliminating the danger of key-stripping.

I-Section Front Axle—No. 805,716, dated November 28; to Adam R. Demory, Canton, O.—The invention relates to the construction of steering knuckles on an I-section front axle for automobiles. Solid with each end of the axle is the jaw type yoke D with a bearing in each arm A and also an eye hole in each. Fitting within the bearing cavity is an adjustable bushing B, which can be locked within the bearing. The axle spindle F has on the top of its vertical but a shoulder C resting directly against the bearing. A portion of the hub extends beneath the lower jaw A for the purpose of attaching the tie rod between the knuckles as well as the rod connecting with the bottom of the steering column. The feature of the invention consists in the construction of the yokes D and the adjustable bushings B.

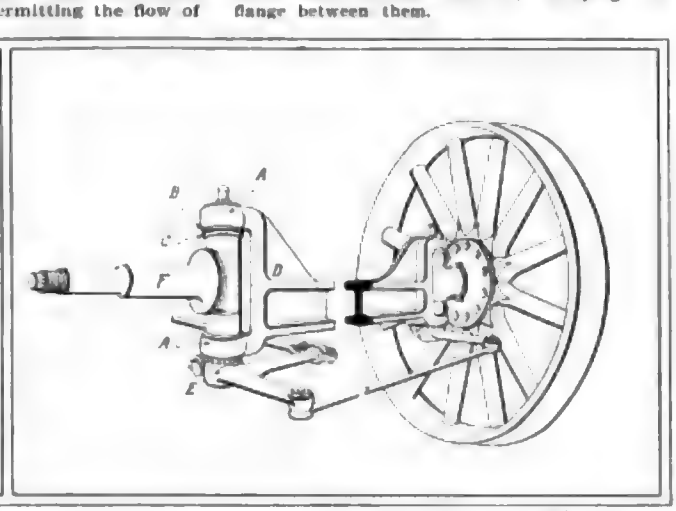
Friction Clutch—No. 805,550, dated November 28; to Harry W. Hill, Cleveland, O.—In the friction clutch referred to, on the rear side of the fly wheel, is a circular flange on the outer and inner face of which operate friction shoes carried on a clutch framework on an extension of the crank shaft, the framework being connected by a sleeve and sliding joint with another shaft running to the gear box. In engaging the clutch the shoes acting on either face of the fly wheel flange are moved radially by a toggle joint contrivance so that the outer shoe is carried in the direction of the hub and the inner shoe carried outward, clamping the flange between them.



SCHRAM'S SPRING WHEEL



GILBOUGH'S IGNITER



DEMORY'S I-SECTION AXLE

Digitized by Google

E. H. Harriman Seeing Sights of Honolulu from Front Seat of White Steamer

Law Doesn't Work—An idea of the way the new Pennsylvania good roads law works—or, rather, does not work—may be had from the statement that of the 1,548 townships in the state but sixty-four applied during the present year for state aid, their allowance being $50,000 for 662 miles of road.

New Excuse—In the crusade for aprons for automobiles in Detroit, it is being claimed that oil dropping on the pavement forms a grave danger for horses, particularly animals belonging to the fire department which slip and slide on the greasy pavements. It is claimed three-fourths of the city's disabled horses are injured by falls on asphalt.

Long Island Nominees—The regular ticket put up by the nominating committee of the Long Island Automobile Club is as follows: For president, Alfred Wilmarth; vice-president, Edwin Melvan; treasurer, Charles Jerome Edwards; secretary, Walter G. Pierson; board of governors for 2 years, Frank G. Webb, G. B. Parker and John B. Mannel, Jr.

Tags Ready—State Highway Commissioner Hunter has completed the organization of the automobile division created by an act passed by the last Pennsylvania legislature and is now prepared to furnish licenses to operate motor vehicles and the necessary number tags. H. M. Cutchall, of Crawford county, is in charge of the division and will have at least one assistant. The new law becomes effective January 1 and the state licenses issued will expire on December 31 of each succeeding year.

Aid to Politicians—The Taxpayers' League, of Reading, Pa., is engaged in an anti-pass crusade, it being averred that the councilmen, by reason of having accepted annuals on the railroads, feel in duty bound to favor the latter when legislation affecting their interests come up for action. On Monday and Tuesday last a committee of the league, in two automobiles, visited every one of the thirty-two councilmen in an effort to induce them to return their passes. They landed five of them, the other twenty-seven standing pat. It required quick work, for the results of the committee's labors were to be reported at Tuesday night's meeting; but the automobiles were equal to the task, and every one of the city fathers was put on record long before nightfall.

Motor Club Ticket—The regular ticket of the New York Motor Club is as follows: President, W. J. P. Moore; vice-president, H. M. Swetland; second vice-president, R. H. Johnston; secretary, A. B. Tucker; treasurer, Frank J. Griffin; directors, W. J. Morgan, M. L. Downs, Robert W. Haff and R. G. Howell.

Means Business—The Crawford County Good Roads Association, of Ohio, held a meeting at Bucyrus last week and perfected a permanent organization. The county commissioners have provided quarters in the court house for the use of the association and monthly meetings will be held. The organization will make an effort to have the state build the proposed Cincinnati-Cleveland state model road through Crawford county.

Brag's a Good Dog—Down New York way they are telling a story on Billy Marion, of the Morgan & Wright outfit. Marion was one of the members of Dave Post's recent hunting party at his Jersey farm. Seated in the ferry house on his return awaiting a boat he was accosted by a stranger, who asked him what luck he had had. Marion put up somewhat of a brag as to his prowess with the gun. His chance friend panned out to be a game marshal and the confession cost Marion $29.30.

Buckeyes Doing Something—In response to a call issued by the Cincinnati Automobile Club, Vernon H. Burke went to Cincinnati Saturday as the representative of the Cleveland Automobile Club at a meeting to perfect an association of Ohio automobile clubs. The purpose of the state organization will be to secure legislation more advantageous to automobile operators, to improve the roads throughout the state and in general safeguard the interests of automobile owners and drivers. It is not improbable that the state headquarters of such an organization will be located in Cleveland, as this city has the largest club and the largest automobile population of any city in the state.

Complain of Road Hogs—W. E. Bartlett and W. M. Frazier, of Huntington, Ind., are complaining of the hostile spirit shown by farmers on the road to Fort Wayne. They say the rural people almost crowd them into the ditch and once or twice on a recent trip almost caused them to upset.

Just Curious, That's All—A Pittsburg citizen has entered suit in the Allegheny courts to test the legality of the wide tire order on the new macadamized roads. His contention is likely to be ruled against, for the public in general and especially the automobile public has found the roads much too valuable to be destroyed by narrow-tired wagons.

Boom in Cleveland—The Cleveland Automobile Club has been making great gains in membership since Charles Marvin took hold as permanent salaried secretary. He has more than earned his way by securing over 125 new members, bringing the membership up to more than 300. November was a banner month, twenty-two new members being admitted.

Nothing Too Good for Them—Some of the Chicago aldermen are of the opinion that each city father ought to have an automobile. Commissioner of Public Works Patterson and Alderman Snow, of the compensation committee, have talked over the idea and they decided that the solons could cover their territory much faster and more completely if they had cars.

Throw Up Sponge—President G. E. Turner, of the Automobile Club of Pittsburg, has announced that the members of the club would submit to both the state and city tax inasmuch as the test case instituted by them was decided in favor of the city of Pittsburg. The club members will take out the state license at the regular county office and also pay the city license fee the same as the present year.

Bisons' Nominations—Nominations have just been made for the annual election of the Automobile Club of Buffalo. President A. H. Knoll, being a busy man, has decided not to accept a reëlection and in his place Herbert A. Meldrum, head of one of the largest department stores in Buffalo, will be chosen. Other nominations on the official ticket, which undoubtedly will be elected, are: Vice president, F. B. Hower; secretary, Dai H. Lewis; treasurer, Charles Clifton; directors, Edward H. Butler, owner of the Buffalo Evening News; E. R. Thomas, of the Thomas Motor Co., and Seymour P. White.

Winton to Wed—Announcement is made of the engagement of Alexander Winton, of Cleveland, head of the Winton company, to Miss Belle McGlashan, of Paisley, Scotland, the old home of Mr. Winton. Mr. Winton, who is a widower, has been acquainted with Miss McGlashan for a number of years. She is a distant relative of his late wife, who met with a fatal accident by falling from a cliff into Lake Erie 2 years ago. Mr. Winton left for London several weeks ago and the only announcement made at that time was that he was to visit the English and French shows. The marriage will take place at Paisley, Scotland, December 12, after which the

Digitized by Google

image
not
available

The REALM of the COMMERCIAL CAR

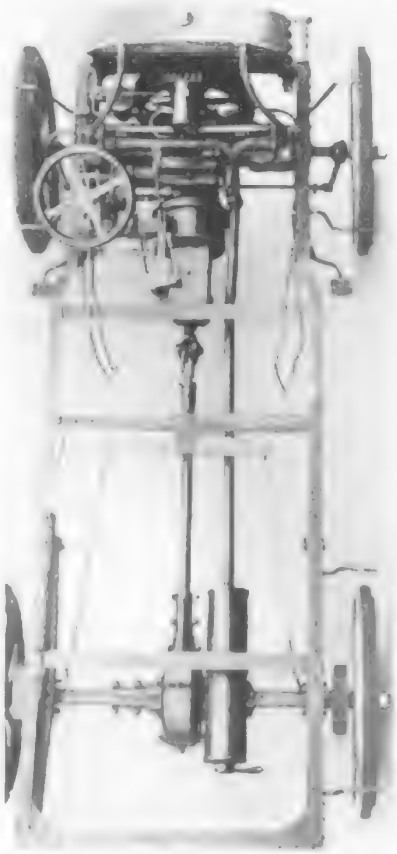
SOULES LIGHT DELIVERY WAGON

A SPEEDY light delivery car, capable of 1,500-pound loads and weighing about 2,000 pounds, is being marketed by the Soules Motor Car Co., of Grand Rapids, Mich., which is having the machines built by the Michigan Automobile Co., of Kalamazoo, Mich. Light delivery work in towns and cities is the field best suited for this little machine, which, with its high motor power and a speed range as high as 25 to 30 miles an hour with its full load capacity, should be a useful addition to concerns requiring speed in the delivery system.

In designing the machine accessibility has been aimed and in so doing the two-cylinder motor has been placed beneath the hood and the sliding gear set connected closely, so that nothing but the propeller shaft is carried beneath the load-carrying platform. Angle pieces form the chassis frame, the sides being slightly offset at the sides of the motor and tied in the center and at the rear by single pieces riveted in position and reinforced by gusset plates. One cross piece aids in carrying the rear of the gear box, another further back carries the muffler, and the back one acts as an end cross piece. The motor and gear box form an integral case of three parts, the gear box, a clutch casing and the crankcase, all three being bolted together and carried on a three-point suspension. Three-quarters elliptic springs are used front and rear, both sets being of the same dimensions, 42 inches long, 2 inches wide and formed with six leaves. The half-length top part is bolted to the frame pieces, and the free end of the bottom half is shackled by a long link directly beneath the frame pieces. The wheel base is 96 inches, tread standard and 34 by 2½-inch solid rubber tires are fitted.

Compactness has not only been sought, but accomplished in the grouping of the motor and gear box in the Soules car. The placing of the two cylinders crosswise in front and having the crankcase housing C extended to the rear to partly form the clutch case D, and this in turn connected with the gear box E, gives a design in which practically all of the power and transmitting plant is carried beneath the forward part of the wagon, so that it is comparatively easy to make examinations or repairs without disturbing the load carried. The cylinders A have on the head small integral flanges B, which, resting direct on the side pieces of the main frame, support the crankcase, and the rear end of the gear box takes its support from a special frame cross piece, which it is bolted beneath. Each cylinder has a 5¼-inch bore and 5-inch stroke, the power being obtained at normal crankshaft speed. The crankshaf Y is a double throw drop forging, with throws set at 180 degrees, and revolves on a pair of bushed bearings, one Z bolted in the front end of the crankcase and the other Z1 formed by a large disk bolted to the rear part C of the crankcase, serving as a partition between the interior of the crankcase and the compartment D enclosing the clutch. The shaft has also a short third bearing in the front end of the gear box at Y1, where it abuts the end of the main gear shaft.

The pistons are made with four eccentric flat-lap rings, three outside of the wrist pin and the fourth near the inner end of the piston, the latter acting chiefly as a lubricant distributor. Connecting rods are 10 inches from center to center and at the outer ends have bronze bushings for the hollow wrist pins but carry babbitted bearings for the crank throws, which material is also used in the two crankshaft bushings. The wrist pin diameter is 1⅛ inch, that of the crank throws 1⅝ inch and the crankshaft bearings 1¾ inch.



CHASSIS OF SOULES CAR

Both sets of valves are mechanically operated and are carried horizontally in the valve ports on the tops of the cylinder heads, so that the push rods and valve stems lie along the top sides of the cylinders. The valve heads are beveled to 45 degrees and are riveted to the stems, which work in long integral sleeves, surrounded by the springs R1 resting on seatings keyed to the valve stems. In operating the valves the camshaft T in the top part of the crankcase has its cams pinned in position. They bear upon rollers in the yoked ends S of the push rods. The arms of the yokes being on opposite sides of the camshaft, act as guides for the rods, preventing their turning, and coil springs R3 within the crankcase and surrounding the push rods serve to constantly retain the latter in contact with the cams. On the outer end of the push rods are fiber blocks R2, against which rest the ends of the valve stems. The camshaft is driven by a small pinion on the front end of the crankshaft.

One feature of accessibility must be noted in that the entire top of the crankcase is removable and when off the camshaft, push rods, push rod springs and camshaft gears are disclosed. The carbureter H is located in front at the right side and its mixture is conducted to the cylinders by a branching pipe J, and a similar pipe K conducts the exhaust to the muffler. Both pipes are retained through long yokes at either end of the cylinder, the yokes resting on the end of each pipe. Spark plugs are inserted vertically in the cylinder ends at P and water leaves each jacket through the openings Q, passing by separate pipes to the top of the radiator. From the bottom of the radiator it is drawn by gear-driven pump and forced into the bottom part of each cylinder jacket.

The timer used differs from most of its class in that in advancing and retarding the spark the high tension wires to it remain stationary. In doing this the commutator casing is made with two bronze segments embedded in it and against the outside of these segments bear stiff springs connected with the high tension wires, which terminate in insulated binding posts to which the springs are connected, so that when the casing is rotated the segments are of sufficient length to remain in constant contact with the springs from the wires.

Digitized by Google

image
not
available

the sweepings upward, over the head of the operator or driver, and into the box receptacle in the rear of the machine. For over a decade the inventor has worked studiously at the new street cleaning device. It was in 1892 that he conceived the idea of a street sweeper that should be worked on the same principle as an ordinary carpet sweeper, although this principle has been improved upon. Thirteen years ago he set to work constructing what proved a year later to be a crude and bulky affair. A traction steam engine was secured, and from the platform at the rear a rotary broom, pivoted from the platform and driven by a chain that connected it with the engine, crudely picked up the refuse from the street and deposited it in a dirt box further to the rear. The first experiment was beset with many discouragements, but the inventor was not dismayed. This first, as well as all subsequent experiments, was made at Fremont, O., as at that time D. June & Co. were successful builders of traction engines and boilers at that point. This first experiment was a failure in a way, but the inventor set to work to build another sweeper, securing an upright engine from the Huber Mfg. Co., at Marion, O. Then the June people put up another engine for the third experiment, and still failing to make the machine a marked success, this third machine was built.

Success did not come until Mr. Kern had built an entirely new machine and installed electric motors to furnish motive power. Whereas the new sweeping machine weighs 5 tons, and has a wheel base of 120 inches, the electric motor for driving the machine along the street is only a 5-horsepower affair. The inventor states that even a motor of that capacity is more than is actually needed. Another electric motor, developing only 2½-horsepower, operates the sweeper proper, the rotary broom, fan, etc. Willard storage batteries of forty cells and 63 amperes are used with marked success. The motors and controller were especially constructed by the Hertner Electric Co., of Cleveland, O. The motors are not unlike any other electric motor, but the controller is, as it is especially adapted for handling two motors at varying speeds.

It is planned to manufacture two sizes of the new electric sweeper, the larger one to work on wide and long thoroughfares, and the smaller machine is intended for narrow and residential streets, also for getting right up to the curbing to get all the dirt. Then by putting the smaller machine on a crowded street, and following right along in the line with other vehicles, it will sweep where white wings are unable to work because of passing vehicles which may form a continuous line. The smaller of the two sweepers has a frame 15½ feet long, over axles of different lengths, the front one being 48 inches, the rear one 66 inches. The rear wheels are 36 inches in diameter, and the front wheels are 34 inches. Turner endless tires are used, 4½-inch for the rear wheels and 4-inch for the front. The weight of the machine and the adhesiveness of the rubber tires give the sweeper a firm hold at all times. Morris single side chain drive is furnished.

The rotary broom, located directly back of the front wheels and composed of half and half of heavy steel wire and African fibre, is 40 inches long, but on the larger sweeper, the brush is 8½ feet in length. The broom is positioned at right angles with the length of the body of the machine, always being directly crosswise to the direction the motor sweeper may be going. According to the inventor's idea, more dirt can be worked up with the broom in this position than if the broom was placed diagonally across. The inventor states that crevices in pavements of all kinds can be cleaned to the depth of 1½ inches. The driver is seated at a steering wheel the same as in an automobile. To the left side, in front and above him, is the box in the dust conduit, this box containing the rotary fan. The driver always has the broom at his command, lifting or lowering the rotary part by means of a foot lever.

As the broom rotates, the dust and dirt, in fact all kinds of refuse, are greatly agitated, the rotary fan in the conduit creating a strong suction from the broom, the suction drawing the dust and dirt to the top of the machine and back to the dirt box. The box in the smaller machine —the box being 8 feet long, 4 feet wide and 6 feet high—will carry 4 cubic yards of dirt. The other sweeper is built on proportionately larger dimensions in every way. The average speed of the new electric motor sweeper is 4 miles per hour when the machine is not sweeping. When sweeping is being done, the speed is from 2½ to 3 miles per hour, all depending on how dirty the street is.

In the perfecting of such a street sweeper, one of the greatest evils and destroyers of life is done away with, as the street is thoroughly cleaned without raising any dust. The great thing about the new sweeping device is the way it works, and the protection it affords to health in the cities, where nearly all the diseases come from germs in the air, and are to a great extent largely circulated by the present day deadly sweeping machines. With the new electric sweeper there is no disease and filth scattered broadcast, but instead the whole mass is gathered into the machine. The germs are not washed into the sewers and catch-basins, either, to arise and again permeate the atmosphere.

As the inventor puts it, sprinkling is done away with. The sweepings are not gathered into wind-rows and piles, then loaded into wagons, all of which constitute two-thirds of the cost of cleaning streets. Sprinkling before sweeping softens dirt and mud is the result, a good portion of which is packed down and not removed. In the use of the Kern sweeper the street is kept so clean that wind and the passing of vehicles fail to raise any dust.

The expense of keeping the streets of a city clean by the Kern automatic sweeper, as compared with the present methods, must not be overlooked. The expense is light. It takes by the present old method ten teams, three men on that many sweepers, one man on a sprinkling wagon, twenty men in the gutter, three on dump wagons, at a total cost of $55.50, according to one conservative estimate, to clean 4 miles of streets in 9 hours, or an average of a little less than $14 for each mile. On the other hand, taking the new Kern automobile sweeper, the fuel needed for 9 hours costs $1, the operator $2.50, and 8 miles of street will have been cleaned. Allowing two men and two teams and wagons to be employed to take the refuse from the machine, allowing $6 extra for that branch of the help, and the same streets can be cleaned at a total expense of a little over $1 per mile. It usually takes an average of 35 minutes for a gang of men on the street to load a wagon with the street sweepings, but with the conveyors on the Kern sweeper, which work automatically, the wagon can be readily loaded in 10 minutes. Mr. Kern and Jacob D. Kiser, the latter being associated with Mr. Kern in the new invention, are forming a company to manufacture the machines, Congressman James H. Southard, of Ohio, also being interested.

KERN ELECTRIC STREET SWEEPER AND DIRT COLLECTOR

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Syracuse, N. Y.—The Amos-Pierce Co. has taken the agency for the Royal Tourist.

Cincinnati, O.—An automobile garage has been opened at 130 East Ninth street by R. C. Crowthers.

Brooklyn, N. Y.—The garage of the Brooklyn Riding and Driving Club is nearing completion, and will shortly be opened.

Syracuse, N. Y.—The B. M. Cornwall Co., of Syracuse, N. Y., will auction off all its automobiles preparatory to going out of the automobile business.

Glen Cove, L. I.—Endeavors are being made to induce an automobile company to locate in the old plant of the Glen Cove Starch Mfg. Co. The location is an ideal one.

Mankato, Minn.—Fred Day and Otto Schwender have formed a partnership under the firm name of Schwender, Day & Co., and will open an automobile livery and garage.

Detroit, Mich.—A. Fisher, who has been engaged in the manufacture of wagons and carriages, has converted his establishment into an automobile salesroom and repair shop.

St. Louis, Mo.—The Cadillac agency has been taken by the Bagnell Automobile Co., which will open shortly on Olive street. The Cadillac was formerly represented by the Halsey Automobile Co.

Hartford, Conn.—The Winkley Co., maker of oiling devices, will shortly remove its factory to Detroit, Mich. It has added to its line the Garlius carbureter and the Eureka separator.

St. Louis, Mo.—The Colonial Automobile Co., a recently incorporated concern, has taken the agency for the Reo and Stoddard-Dayton cars. This company will be located at 3944 Olive street.

Denver, Colo.—Mr. Mathewson, of the Mathewson Automobile Co., has had plans prepared for a new garage to be built at 1622-1626 Broadway at a cost of $100,000. It is to be completed by January 1.

Gardner, Mass.—Levi H. Greenwood is to build a new automobile station which is to be run in connection with the Windsor hotel. A Worcester firm, Scovil & Wheeler, has the contract for the work.

Syracuse, N. Y.—The Franklin Autocycle Co., of Hammondsport, N. Y., has built a motor for George T. Tomlinson, of Syracuse, to be used in the new airship in which he intends to cross the continent.

Detroit, Mich.—The Standard Auto Co. announces that instead of the Detroit Motor Car Co. it will handle the Peerless. The company is located at 260 Jefferson avenue, but will be in its new place on Woodward avenue in 90 days.

Cleveland, O.—The Central Automobile Co. has been acquired by Alvin H. Smith and A. B. Weil, T. T. Long, who has been at the head of the company, having retired. The company has a large garage and salesroom at 38 Vincent street, and handles the Studebaker.

Topeka, Kan.—The Topeka Auto & Cycle Co. has taken the agency for the Mitchell car.

St. Louis, Mo.—The Parker Automobile Co. has taken the agency for the Baker car. This company also handles the Thomas and Autocar.

Fort Wayne, Ind.—A garage and automobile repair shop is to be established by Amos J. and Peter Rousscy under the name of Amos J. Rousscy & Brother.

Greenfield, Mass.—Charles F. Peck and George Parsons have sold their automobile station in Federal street, to Manley Brothers, of Brattleboro, Vt.

Pittsfield, Mass.—The new automobile factory on the site of the old satinet mill is practically completed and will be ready for occupancy about January 1. Alden Simpson is the owner of the plant.

Syracuse, N. Y.—Richard E. Kolbe, who has been connected with the Amos-Pierce Automobile Co., has leased a building at 232 East Water street, which will be fitted to be used for an automobile livery.

Louisville, Ky.—C. D. Simpson has retired from the firm of the Simpson-Strauss Automobile Co., the partnership having been dissolved. Garnett S. Zorn, John Mason Strauss and Harry S. Volz have formed a new corporation to carry on the business of the old firm. The new concern has secured the agency for the Stevens-Duryea car, and a general agency covering Kentucky, Alabama and Tennessee for the Pierce Great Arrow.

Nashville, Tenn.—J. S. Roller will handle the Reo line exclusively in this city and adjacent territory.

Topeka, Kan.—J. M. Padgett will handle the Waverley electric cars in addition to the Stevens-Duryea output.

Cincinnati, O.—The Cleveland Automobile Co. is endeavoring to secure a site for the location of an agency here.

Harvard, Ill.—The Three Manley Brothers have taken the Mitchell agency and will make the automobile business their leader.

Charlevoix, Mich.—G. G. Williams & Son have removed to New Bedford, Mass., and will open an automobile repair shop and garage.

Philadelphia, Pa.—The Diamond Motor Car Co., 2117-19-21 North Broad street, has secured the Philadelphia agency for the Jackson car.

Youngstown, O.—The Youngstown Auto and Repair Co. has been organized to handle the Reo exclusively in Mahoning and Turnbull counties.

Colorado Springs, Colo.—The 1906 agency for Franklin cars has been taken by W. J. Batchelder, president of the Anthony Motor and Manufacturing Co.

Columbus, Ga.—A charter has been granted to the Albright Mfg. Co. This company is capitalized at $14,000 and will carry on a general manufacturing and repair business.

Springfield, Mass.—The interests of the Erickson Mfg. Co. have been taken over by the Ericka Mfg. Co., which has been organized with a capital of $10,000 to push the Ericka hand soap.

Detroit, Mich.—Young & Miller, 254 Jefferson avenue, have been succeeded by Fee & Bock, Mr. Young retaining his position as manager and the company continuing to represent the Elmore.

Jersey City, N. J.—To provide for the increasing demand for W. J. Kell's honeycomb water coolers, radiators, tanks and mufflers, the plant has been removed to the new five-story building at 62 Van Winkley avenue.

New York City—The firm of L. J. Carpenter has sold for Thompson W. Decker to Harry M. Austin a four-story stable at the northeast corner of Thirty-third street and Park avenue, 50 by 100 feet. The building will be made into a garage.

Philadelphia, Pa.—F. W. Stockbridge, former manager of the Reo Philadelphia branch, has accepted the position of sales agent for the Foss-Hughes Motor Car Co., of the same city, which handles Cadillac, Pierce-Arrow and Baker electric cars.

Bridgeport, Conn.—The Wolverton Motor Works Co., of Grand Rapids, Mich., has secured an option on a tract of land on Bay street, with a frontage of 600 feet on the Bridgeport harbor. The company will establish a plant there, providing the common council will abolish two streets. The company manufactures all sizes of marine motors.

LATE INCORPORATIONS

Newark, N. J.—The Turbine & Locomotive Car Co. has been incorporated with a capital stock of $500,000. The company will manufacture engines and vehicles of all kinds.

New York City—The American Generator Co. has been incorporated to engage in the manufacture of vehicles and motors. The capital stock of the company is $100,000.

Rochester, N. Y.—The McKinley Motor Car Co. has been incorporated with a capital stock of $20,000. The company will engage in the manufacture of motor cars.

Buffalo, N. Y.—McNaughton & DuBroy have been incorporated to manufacture motors, engines and automobiles. The capital stock of the company is $10,000.

New York City—The Blackall & Baldwin Co., manufacturer of electric motors, has been incorporated with a capital stock of $50,000.

Boston, Mass.—The Penn Auto Supply Co. has been incorporated with a capital stock of $100,000. It will deal in automobile supplies.

Albany, N. Y.—The Babcock Electric Carriage Co., of Buffalo, has been incorporated with a capital stock of $100,000.

Brooklyn, N. Y.—The Private Garage has been incorporated to deal in automobiles, etc. Capital stock, $2,000.

Flint, Mich.—The Welch Motor Car Co. has certified to an increase of capital stock from $100,000 to $250,000.

Newark, N. J.—The Calvert-Zuri Auto Co., of Newark, has been incorporated with a capital stock of $20,000.

Battle Creek, Mich.—The American Motor & Cycle Co. has been incorporated, with a capital stock of $10,000.

New York City—The Triumph Motor Car Agency has been incorporated with a capital stock of $15,000.

Detroit, Mich.—The Walker Motor Car Co. has been incorporated with a capital stock of $200,000.

Digitized by Google

Among Makers and Dealers

Roof of Argyll London Branch Used for Garage Purposes

Bennett Changes—A. L. Bennett, former manager of the de Dietrich branch at Boston, is now assistant manager of the Mors Automobile Co., of New York.

Greeley Likes Motoring—General Greeley, chief of the United States signal service, is an enthusiast over automobiling since his experience driving a Thomas car while in Nome, Alaska, last August.

Tradesman Weds—Richard Harry Johnston, of New York, publicity engineer for the White Sewing Machine Co., was married last week to Miss Winifred Vaughan, daughter of Dr. and Mrs. J. A. Vaughan, of Brooklyn.

Electric Siren—Alden L. McMurtry, of New York, of Ormond timing apparatus fame, is now having his latest invention, an electric siren, manufactured. It will shortly be put on the market by the New York Motor Car Co., of which he is a stockholder and official.

Drops Providence—Wilbur C. Walker, secretary of the Pope Mfg. Co., has sold the Providence branch house effects of the company to the Shepard Co., of Providence, a large dry goods house which will maintain it as an automobile salesroom and garage. The Shepard Co. will handle the line of Columbia cars and the Pierce products.

S. & M. Branch in Paris—Smith & Mabley, of New York, importer of Mercedes, Renault and Panhard cars, and manufacturer of the Simplex, is to establish a Paris branch. L. P. MacNamara has sailed to take charge of it. As fully one-quarter of the S. & M. customers take delivery of their cars abroad the branch will be installed to look after them and assist them in shipping the cars to this country. The branch will be opened very shortly.

October Imports—According to the latest government returns ninety-five automobiles, valued at $409,841, were imported into this country during October, while during the 10 months ending with that month the number of cars imported was 390, valued at $1,475,299. During these same periods the imports of automobile parts were valued at $17,921, and $86,674, respectively.

Back in Gotham—I. H. Manning, who went to Chicago from the White branch at New York, to join Webb Jay's force, has returned and is now on the selling staff of the Franklin department of the Decauville Automobile Co.

Joyce Moves—James Joyce, formerly of the Electric Vehicle Co., has gone with the American Locomotive Co., as assistant to Albert Otto, the general manager. Mr. Joyce is a veteran of the bicycle days and is well known through his long connection with the Pope Mfg. Co.

Makes a Hit in France—The Rushmore Dynamo Works, of Plainfield, N. J., has decided to open an agency at 79 Avenue de la Grand Armee, Paris, where a stock of searchlights, generators and supplies will be carried. S. W. Rushmore will be at the Paris show, after which he will tour through France and Germany in a 60-horsepower Fiat.

Vicqueots Arrive—The Vicqueot Co., of which Hector H. Havemeyer, of the Vehicle Equipment Co., is president and Louis Caswell is manager, now located at the former de Dietrich garage, on West Forty-eighth court, New York, has received the first samples of the new Vicqueot cars. They are built at Puteaux, near Paris, at a factory now owned by Mr. Havemeyer. They appear in two models—a 40-45-horsepower and a 28-32-horsepower.

Stearns Spreading—The F. B. Stearns Co., of Cleveland, has decided that despite the fact that it erected a large addition last fall, its present quarters are still too small to take care of the demand that is now apparent. President Stearns has had plans prepared for an addition two stories high and 60 by 150 feet. Ground has already been broken. It is a rush contract and it is expected that the building will be ready for occupancy by the first of the year. It will be fitted up as testing and experimental rooms, while the upper floor will be used for storage and drafting room, converting the spaces at present occupied by the departments mentioned into an additional machine shop.

Fiat Garage Nearly Ready—Hollander & Tangeman, New York, will take possession of their new garage at Broadway and Fifty-sixth street, on December 20.

Hotel Garage—The Rickers, of Poland Springs, Me., who became wealthy through the sale of spring water and the conduct of the Springs hotel in Maine and the old Astor house in New York, are now building a mammoth garage in South Poland for the accommodation of guests at their Maine hotel.

Foreign Business Increasing—F. M. Keaton, manager of the sales department of the Pope-Toledo plant, is authority for the statement that the foreign trade for the past season was about four times what it was for the previous season. He furthermore stated that foreigners were taking about 6 per cent of the production of the Toledo plant.

Subscription Shark at Work—Complaint is made by Motor, of New York, that an unauthorized person, who has been traveling under the name of G. K. Buck, Leon Ames and Walters, has been soliciting subscriptions and classified advertising which have never been turned in. The man is described as being about 5 feet 11 inches tall, smooth shaven and with a nervous twitching of the face. Motorists are warned to beware of imposters and to telegraph Motor in case this individual turns up.

Foreign Shipments—The returns for the 10 months ending October, 1905, show that automobiles and parts to the value of $2,369,621 were shipped abroad during that period, as against a value of $1,576,877 for the first 10 months of last year and $1,311,960 for the corresponding period of 1903. Classified as to countries, the shipments during the first 10 months of this year were divided as follows: United Kingdom, $604,782; France, $254,030; Germany, $101,998; Italy, $154,325; other Europe, $222,817; British North America, $501,765; Mexico, $150,042; other West Indies and Bermuda, $124,552; South America, $48,938; British East Indies, $28,602; British Australasia, $85,548; other Asia and Oceania, $60,591; Africa, $28,737; other countries, $2,894.

Prices in Dayton—Automobile dealers in Dayton, O., have issued the following schedule of prices: Repairs, 60 cents per hour; helper, 40 cents per hour; Sunday and night work, 75 cents per hour; washing, polishing and tire work, 50 cents per hour and no charge less than 50 cents; no adjustment or small repairs less than 25 cents; towing in machine or using machine owned by garage for repairs, etc., $1 per hour for use of machine and 60 cents per hour for each man used; storage, 12 or 24 hours, 50 cents; dead storage, runabouts, $3; touring car, $5 per month; in and out storage, runabout, $5; touring car, $7 per month; storage, washing, cleaning and polishing runabout, $9; touring car, $15 per month; storage, washing, cleaning, polishing and delivering runabout, $12 per month; touring car, $18 per month; gasoline, 15 cents per gallon; 76 gasoline, 20 cents per gallon; special oil, 75 cents per

Digitized by Google

gallon; engine oil, 60 cents per gallon; transmission oil, 60 cents per gallon; renting, $3 first hour and thereafter $2.

English Ingenuity—It has remained for the British to utilize the roof of a garage for the purpose of washing cars, the Argyll, of London, having adopted this scheme.

Sail for France—Sidney B. Bowman, W. Tilford Jones and Clovis Bertrand, of the Bowman Automobile Co., New York, and Albert Champion, of Boston, were among those to sail last week for the Paris show.

Doing It Right—Manager Tate, of Douglass, Andrews & Co.'s New York headquarters, is touring New Jersey in a Berkshire car placing agencies for the firm, which has contracted for the Berkshire output.

Hartford Doings—The Palace Auto Station of Hartford, Conn., will continue to handle next season the Thomas, Locomobile, Autocar and Pope lines, which it has handled in the last two seasons, while Brown, Thomson & Co., of the same city, will sell the Stevens-Duryea, Winton, Franklin and one other car not now determined upon.

Tolerton Estate—According to the report as made by the appraisers of the estate of the late E. W. Tolerton, who was one of the principal stockholders in the Consolidated Mfg. Co., manufacturer of the Yale automobile, the deceased left an estate estimated to be worth $456,486.88, a large part of which was in the stock of various corporations.

Witherbee Move—The Witherbee Igniter Co., manufacturer of Witherbee storage batteries, has moved from 27 Thames street to larger quarters at 541 West Forty-third street, New York city. The new factory is five stories high and will have a capacity of 1,000 batteries a week for the automobile trade, while at the same time the company can carry on the manufacture of larger batteries for stationary work. The company announces it is supplying forty-five automobile and motor boat makers.

Thomas in New Factory—The new plant of the E. R. Thomas Motor Co. at Buffalo was opened for work on Wednesday, when a number of workmen were started at the benches on the first floor. The new building is not yet completed, but work is being rushed on it, and it is thought it will be in shape within a short time. It is of concrete construction and is the form of an irregular L, 190 feet by 195 feet. It is three stories in height, and, when completed, will give the company 118,000 square feet of floor space.

Export Trade Growing—The latest compilations of the government statisticians afford further evidence of the growing importance of the American automobile export trade. During October last these exports were valued at $133,988, as compared with a value of $130,891 for the corresponding month of last year. Shipments during October last were made as follows: United Kingdom, $50,136; France, $2,190; Germany, $8,162; Italy, $1,740; other Europe, $8,903; British North America, $18,715; Mexico, $13,464; other West Indies and Bermuda, $12,274; South America, $5,571; British East Indies, $3,620; British Australasia, $4,000; other Asia and Oceania, $1,315; Africa, $2,716; other countries, $2,156.

Oldsmobile Recruits—K. C. Darling, formerly with the Peerless agency, and W. J. Laster, until recently with the Homan & Schantz Co., the metropolitan agent for the Rambler and National, have joined the selling staff of the Oldsmobile Co. of New York.

Buick Opening—H. T. Koehler, of Newark, N. J., sales agent in the metropolitan district of the Buick Motor Co., has just opened a New York branch at Broadway and Fiftieth street. F. G. Benson is the local manager, though Mr. Koehler runs over from his Newark store for an hour or two each day.

In Old Riding School—The Cook & Stoddard Co., of Washington, D. C., have opened a garage in the old riding academy at Twenty-second and P streets, N. W., which it will operate in connection with its large salesrooms on Connecticut avenue. Its 1906 line will be the White, Baker, Franklin and Locomobile.

Shanks Home—Charles R. Shanks, of the Winton Motor Carriage Co., is back from his exposition tour across the continent and is now making a flying trip calling on branch stores. All of the Winton branches have received their new models and Mr. Shanks will give additional pointers and instructions as to handling them.

Fight For Office—A lively campaign is promised the members of the Buffalo Automobile Trade Association, J. A. Cramer, a prominent retail automobile dealer, and E. C. Bull, manager of the city sales department of the George N. Pierce Co., having been nominated for the presidency. For vice president W. C. Jaynes and G. H. Poppenberg are the candidates. D. H. Lewis is the sole candidate for secretary, as is John J. Gibson for treasurer, but for the three executive committee places these nominations have been made: P. W. Eigner, E. E. Denniston and one representative each from the [illegible] N. Dietz Co., the Central Motor Co., the Thomas Motor Co., the Brunn Carriage Co., and the O. K. Machine Works.

Cryder Leases Building—Cryder & Co., American representatives of the Lesti Berlee Motor Syndicate, have leased the building at the northeast corner of Park avenue and Sixty-third street, New York, for a garage.

Orders Decauvilles—E. S. Partridge, vice president of the Decauville Automobile Co. of New York, returned last week from Paris, where he secured a full line of 1906 Decauvilles for the Madison Square garden show. He attended the Olympia show in London, and brings back with him a full line of new ideas which he secured by looking over the cars on exhibition in the big hall.

Bow to the Law—M. Kirschberger & Co., of New York, manufacturers of acetylene burners, announce that since the courts have recognized the validity of burner patents they control, one prominent English firm which had been one of the chief offenders, has bowed to the law and taken out a license. Kirschberger & Co. started suit in 1900, and carried it to the court of appeals of the state of New York, which sustained the patent. Then injunctions against imitators were secured, a recent decision in Chattanooga, Tenn., granting three injunctions against the infringers.

Foreign Strike Pending—John G. Dale, of Mendel, Dale & Co., New York, comes back from Europe with a story of an impending strike in the automobile factories. "The unions have been growing strong," said Mr. Dale, "and the demand for shorter hours, with bigger wages, has almost reached the breaking point. Not alone the body builders, but the machine hands as well, are preparing for a fight that may be a severe setback to the foreign industry. Most of the makers are rushing the work so as to get as many cars as possible ready for delivery before the first of the year."

GENERAL GREELEY, OF THE UNITED STATES SIGNAL SERVICE, IN THOMAS CAR IN ALASKA

Reduced Railroad Rates

to all members of the AMERICAN MOTOR LEAGUE who travel

to the City of New York

to attend the meeting of the A. M. L.—to which all automobilists are invited—beginning Monday, January 15, and ending Saturday, Jannary 20, both dates inclusive. As this is the

Week of the Automobile Shows

our members will have an opportunity of taking part in convention work and of enjoying the gala week at the same time.

Important Notice—This redneed rate benefit is for league members only. Persons wishing to join the league and to receive this benefit should immediately send names and addresses—plainly written with 1 year's dues—$2 for each applicant. The railroad associations will not grant reduced rates in aid of an automobile show or any other purely commercial enterprise. They will recognize only those certificates which are held by league members.

Each member who comes to these meetings should bring his membership ticket. This will save the trouble and delay of searching membership records. Every expired membership should be renewed. Full printed information will be sent on request. Address

AMERICAN MOTOR LEAGUE

Vanderbilt Building, New York, N. Y.

Digitized by Google

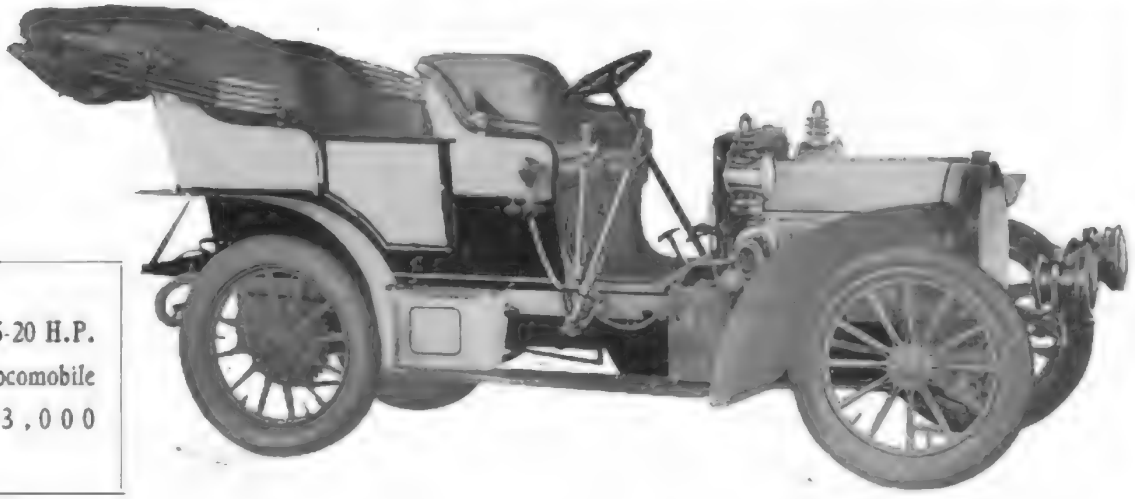
WINTON MODEL K

MODEL K DELIVERY DATES

Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., $3,000, 30-35 H. P., $5,000, both with complete touring equipment



15-20 H.P.
Locomobile
$3,000

TYPE "E" Locomobile 15-20 H. P.

PRICE—**$3,000** ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five; extra wide doors, fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—32x4 inches on all four wheels.
WHEEL BASE—93 inches.
CONTROL—Gas and spark levers on steering wheel.

TYPE "H" Locomobile 30-35 H.P.

PRICE—**$5,000** ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Is placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—34x4½ inches.
WHEEL BASE—106 inches.
CONTROL—Spark and gas levers on steering wheel.

The Locomobile Company of America, Bridgeport, Conn.

NEW YORK, 76th St. and Broadway.
PHILADELPHIA, 240 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

FRANKLIN

"The Motor Car of the Future"

That Franklin slogan is not an idle phrase, but a statement full of life and meaning.

It is backed by those telling facts which alone can give vitality to any claim.

The first **Franklin** four years ago had four air-cooled cylinders, and was built for power, lightness and strength, without regard to cost.

It was the first 4-cylinder car built in America—the first successful air-cooled car in the world.

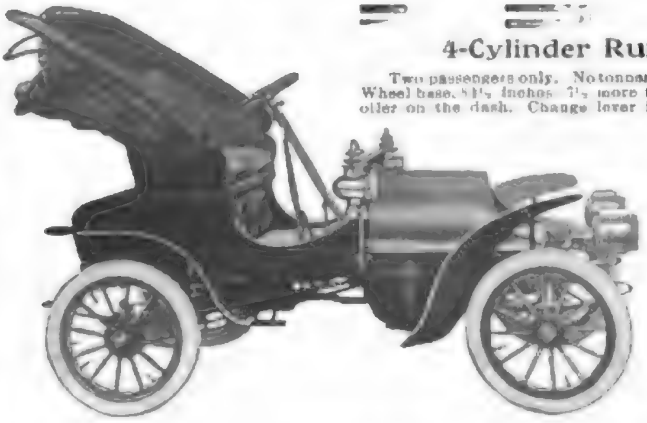
Franklin engineers were the first to perfect throttle control; the first to adopt the automatic carbureter in a four-cylinder car; the first to perfect it; the first to use automatic lubrication; the positive fan and the single intake trunk (which foreigners are now copying); the first to make and use a successful auxiliary exhaust, flexible-frame cars, the round hood and full elliptical springs without reaches.

Today the majority of manufacturers are coming around to four cylinders. Many have adopted air-cooling; many more wish they had; and all are trying to build lighter, stronger, and with better springs.

They are beginning to see —"as through a glass, darkly,"—what is plain as daylight to most thoughtful minds; that heavily constructed, complicated, cumbersome cars are not suited to American ideas nor American roads, to say nothing of American purses.

Franklin principles—multi-cylinder, air-cooled motors, light weight and the highest grade most durable construction—have proven themselves the best foundation on which to build an enduring standard type of American motor car—"The Motor Car of the Future."

And the far-advanced design and detail perfection of this season's Franklins will make them not one-year cars, but favorite and standard cars for many years to come.



Type E

4-Cylinder Runabout or Gentleman's Roadster

Two passengers only. No tonneau can be attached. 12 "Franklin horse-power." Air-cooled engine. Wheel base, 81½ inches. 3½ more than last year. Roomier, more graceful, easier riding. Force-feed oiler on the dash. Change lever inside the car and forward. Especially convenient when top is on. 1,100 pounds.

One combination ironing which will accommodate canopy, cape or victoria top and glass front. 40 miles an hour. $1,400. F. O. B. factory.

Full head- and tail-light equipment.

This is really the most economical of all runabouts. Its construction and the materials put into it equal those of any high-priced touring car. It costs 50 per cent per pound more to build than any cars except Franklins; and it gives enduring service and satisfaction at the smallest possible expense.

While a millionaire can ask nothing abler, handsomer or more luxurious; the average business or professional man, physician, salesman, superintendent or suburbanite can find no better value.

Type D

The finest, speediest, 4-cylinder Touring Car.

Type G

The new light Touring Car.

Type H

The new 6-cylinder top-notch flyer.

We exhibit in New York at Madison Square Garden, January 13-20, 1906

H. H. FRANKLIN MFG. CO., Syracuse, N. Y. M. A. L. A. M.

"The Motor Car of the Future"

Digitized by Google

MITCHELL

"The car you ought to have at the price you ought to pay"

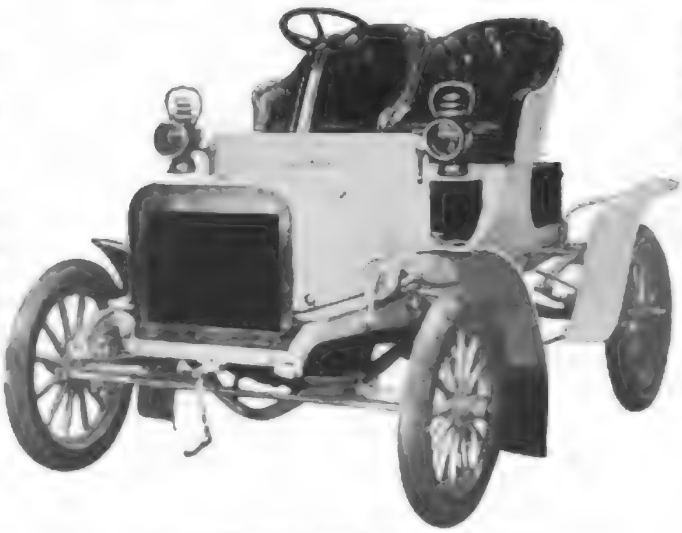
One of our Five 1906 Models

No car at any price surpasses this magnificent

Runabout

in style, up-to-dateness or smartness in appearance. It is as carefully designed as any $3000 or $4000 car in the world, and because of its remarkable beauty attracts at first sight, the lasting admiration of all who see it.

$750



Model 28 2-cylinder, vertical motor, mounted in front.

Has ample power for every condition of roads, climbs hills with perfect ease and has proved itself in every particular a car of rare value. Its hill-climbing abilities are absolutely dependable.

Our 1906 line includes this Runabout, a $1500 Touring Car, a Commercial line and two other models yet to be announced.

Write for 1906 catalogue—the handsomest ever issued.

MITCHELL MOTOR CAR COMPANY, RACINE, WIS.

Member American Motor Car Manufacturers' Association

Digitized by Google

SEND FOR THIS BOOKLET

of Peerless 1906 Information, if you intend to buy a 1906 car—or if you are interested in automobiles—for it contains one of the most complete mechanical descriptions of an automobile ever printed. It not only tells just what are the famous Peerless mechanical principles, but it also explains why we have found them best.

A postal will bring it—Send today

THE PEERLESS MOTOR CAR CO.

802 Quincy Street, Cleveland, Ohio

Member A. L. A. M.

Digitized by Google

OLDSMOBILE

Two-passenger Two-cylinder Touring Car. Model "L" Price $2250

We have already announced in a general way our two-cylinder, two-stroke cycle car. Following we give a detailed description of this most attractive car—its smart appearance and "get in and get" qualities of which make a decision once met.

Model "L" has a marked individuality, though it approaches in general appearance the lines of several foreign machines very popular in America. The front axle is brought well forward and the rear wheels back, giving a very long wheel base and adding to the easy riding qualities of the car. The tonneau is so constructed that it is easily removable, and the broad rear luggage compartment is built for utility as well as for appearance. When thus equipped it becomes the most attractive of two-passenger or runabout outfits. The standard color will be dead gray with black trimmings and red running gear.

The engine is a two-cylinder, two-stroke cycle type, mounted at the rear of the car. The cylinders are of generous proportions and consist of bronze combustion heads with cabinet iron barrels. They are cooled by water circulated by gear pump. Ignition is by storage battery and coil or dash. Transmission is by sliding gear. Engine bearings are of the babbitt type.

Cooling is by water circulated by gear pump. Radiator is of tube construction. Ignition, dry storage battery and coil or dash. Transmission is by sliding gear. Engine bearings are of the babbitt type.

Lubrication is by splash system. The transmission is sliding gear type, three speeds forward and one reverse. The gears are of

Digitized by Google

OLDSMOBILE

special high carbon stock tempered and hardened. The control is of the selective type operated by a single lever which cannot be thrown into reverse until prawl has been lifted, a precaution against accidental jamming of gears. The clutch cone sets into fly wheel, all strains self-contained. The clutch is thrown out by foot lever and also by emergency brake lever. The transmission case is of aluminum, the lower half being removable at top. Transmission is splash lubricated from case through pockets packed with waste and screens. This precaution is taken to prevent steel chips getting in bearings. The transmission drive is through 1¼ inch shaft and Spicer dust-proof universal joints to the rear axle.

AXLES. The front axles are of our own special design, 2-inch tubing, ¼ inch wall. Steering connections have especially large bearings, all of which are equipped with "T" handled dope cups and protected by leather dust caps. The steering cross connections and steering link are adjustable, and the wheels may thus be lined up at any time. The axle is dropped in center to protect fly wheel and other parts beneath car. The rear axle is equipped with Timken Roller Bearings throughout and with brakes, etc., of our own special design.

BEVEL GEAR DRIVE. The car has bevel gear drive, the ratio of the gear being 3 to 1 for standard equipment.

BRAKES. The brakes are of the internal expanding type, with toggle set-up, either camel's hair or metal lining being used, depending upon the section of the country to which car is shipped. The brake drum is of pressed steel, 12 inches in diameter, 2-inch face. The brake on the cardan shaft at rear of transmission is operated by foot pedal, while the emergency brake upon the rear wheels is operated by hand lever. The application of emergency brake throws out clutch, disconnecting transmission from motor.

SPRINGS. The springs are made of the very best stock obtainable, and are of the half elliptic type. The front springs are 36 inches by 2 inches and the rear 48 inches by 2 inches. The long spring hangers at front and rear permit lengthened wheel base.

FRAMES. The frames are of pressed steel channel section. A sheet steel plater riveted between side and sub-frames gives pronounced bracing effect. The dust pan attached to sub-member and extending from front cross member to the rear of transmission is removable. This dust pan makes inside of car absolutely dust, mud and water proof. Both the engine and transmission are aligned upon sub-frame and all working parts may be removed without disturbing hanging of crank and transmission cases.

CARBURATION. The carbureter is built for us after our own design, and is very effective and economical of fuel. The gasoline tank has 15 gallons' capacity.

CONTROL. The steering is accomplished through a worm and nut mechanism. The nut is long and has a wearing surface babbitted so that same may be replaced at any time. The steering gear case is securely bolted between sub-frame and side member. The spark and throttle levers are placed upon steering post just beneath and at the right of 16-inch oval rim steering wheel.

MISCELLANEOUS POINTS. Wheel base 102 inches, the tread standard 55 inches, though 52 inches and 58 inches are furnished on special order. Wheels 30 inches, 10 spokes front, 12 spokes rear. Tires, 30x3½. The muffler is arranged longitudinally beneath the car and entire construction is so enclosed that very little dust is disturbed by the passing of the car. Running board, mud guard irons, instead of being riveted on, are drawn into taper sockets upon side of frame and are easily removable. The lamp brackets are adjustable for different widths of lamps. We furnish tubular horn, two acetylene lamps, a generator and three oil lamps with this car.

Further specifications sent on request.

OLDS MOTOR WORKS, Lansing, Mich., U. S. A.

Member A. L. A. M.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. I am interested.

Model B.... Delivery Cars....
Model S.... Passenger
13 Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. 13

Name _____

Address _____

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have MOTOR TALK, a magazine devoted to automobiling, sent to me for 1 year. 13

Name _____

Address _____

Digitized by Google

WAY'S MUFFLER
WHICH WAY
DO YOU WANT IT?
Either
Protect
Your
Throat

POPE Toledo AUTOMOBILES

1906 MODEL POPE TOLEDO TYPE XII 35-40 H. P.

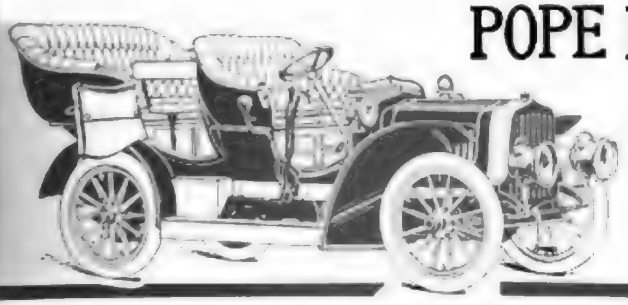
Price, $3500

More Power, Speed, Room, Strength — **Less** Weight, Expense, Trouble, Complication

The fastest and most powerful touring car in the world. **Type XII, Pope Toledo** marks the greatest forward step yet attained in automobile development. **Motor** has only **10 5/10 pounds of engine weight per H. P. and only 54 pounds of total weight per H. P.** and this too, without in any way sacrificing strength and wearing parts. The **Pope Toledo Carbureter** is developed to such a point of fineness, that it is self adjusting to all conditions of speed, so that with the **Spark** and **Throttle** alone, and always on the high gear, you can drive a **Pope Toledo** anywhere, taking all ordinary hills without rushing them and without shifting gears. **Transmission:** sliding gear three speeds forward and reverse, and made of the best steel obtainable. By its use we are enabled to produce not only the LIGHTEST but the STRONGEST and most efficient **Transmission** ever placed in any automobile. **Frame:** all steel of few parts, light, flexible and strong, making the car very easy to ride in. The **Pope Toledo system of brakes** is incomparable; both foot and emergency brake act on the hubs of the rear wheels; are very efficient and easily adjusted. **Design:** entirely new and original. Double side entrance, very large and roomy TONNEAU, specially easy of access. Car comfortably seats seven people.

Order now for early delivery. Price, $3500

Be sure the name **"POPE"** is on your automobile.



POPE MOTOR CAR COMPANY

TOLEDO, OHIO

New York City: 1735 Broadway
Boston, Mass.: 223 Columbus Ave.
Washington, D. C.: 819 Fourteenth St.

A. L. A. M.

Digitized by Google

LOZIER

BEING TALKED ABOUT

If you are Automobile wise, you have heard much of late about

The LOZIER Car

In what is being said among your friends, at the Club and elsewhere, there is an undefinable something that must have convinced you that this is a car of real merit.

YOU HAVE NOT HEARD AN UNFAVORABLE WORD

Those who have seen the car, pronounce it a GREAT MACHINE. Those who own and drive one (and all have been owners of other high grade cars, both American and Foreign), say:

"The Finest I Ever Owned"

INFORM YOURSELF FURTHER

Deliveries of all styles, Limousines, Landaulets, Touring Cars. Prices $4,500 to $5,500.

THE LOZIER MOTOR CO., 1 Broadway, N. Y. City

Temporary salesroom at R. M. Stivers', 19 West 63d Street, for a short time, on if our building at Broadway and 58th Street is completed.

Digitized by Google

"Every stock car guaranteed to show sixty miles an hour before leaving the shops." E. R. THOMAS.

THOMAS

Can any praise of ours compare with the eloquent testimony concerning the 1906 Thomas contained in this remarkable affidavit?

Buffalo, New York, November 10, 1905.

This is to Certify, That we, the undersigned, this day rode at the rate of 60 miles per hour with five passengers over average roads, maintaining a speed continuously in regular stock model 1906 Thomas touring car, and went up a 14 per cent grade with five people on the high speed and on very bad roads increasing the speed all the way up the hill until we reached 40 miles per hour at the top.

The car is exceedingly smooth and quiet in operation, and the clutch is extraordinarily sweet and effective.

This is the only American built stock car that within our knowledge has made 60 miles per hour on ordinary roads, even without passengers.

(Signed) AUBREY H. MARTIN, Philadelphia, Pa.
C. A. COEY, Chicago, Ill.
F. W. DART, Hartford, Conn.
C. S. HENSHAW, Boston, Mass.
F. B. HARPER, Beverley, Mass.
A. M. SPEAR, JR., Portland, Me.
A. S. ROBINSON, New York.
RAYNER GOODWIN, Brooklyn, N. Y.

STATE OF NEW YORK, }
COUNTY OF ERIE, }

Sworn and subscribed to before me this 10th day of November, 1905.

ARCHIE I. DRAKE, Notary Public

THE E. R. THOMAS COMPANY 1417 Niagara Street Buffalo, N. Y.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

ANNOUNCEMENT

CORBIN CARS FOR 1906

Model E, Light Touring Car, Price $2000

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs of special design and great flexibility. Wheels 32 x 3½ inches. Weight 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools constitute the equipment.

Model G, High Powered Runabout, Price $1800

The specifications of this model de luxe two passenger car are identical with the Model E with the exception of wheel base, 93 inches. Body latest French type for two passengers, divided front seats. Long, graceful tail box. The metal parts are lightened wherever compatible with safety. Speed 50 miles per hour.

Annular Ball Bearings Are Employed Throughout

Agencies in certain desirable territory are still open. Representative dealers are requested to communicate with us promptly to insure early delivery of cars.

Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati

Digitized by Google

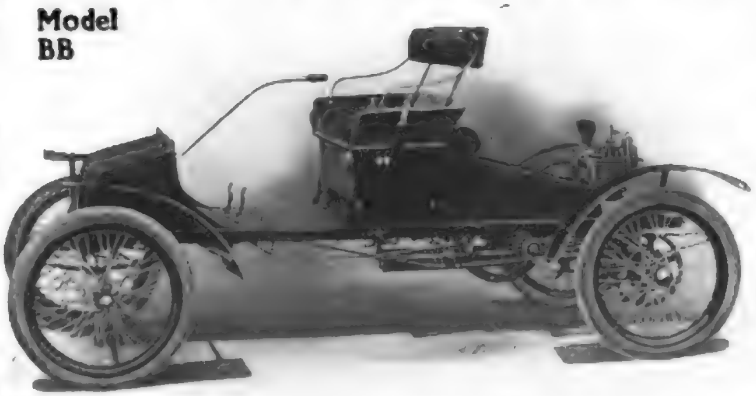
image
not
available

1891
1906

Orient Buck-board

FRICTION-DRIVE

Model BB

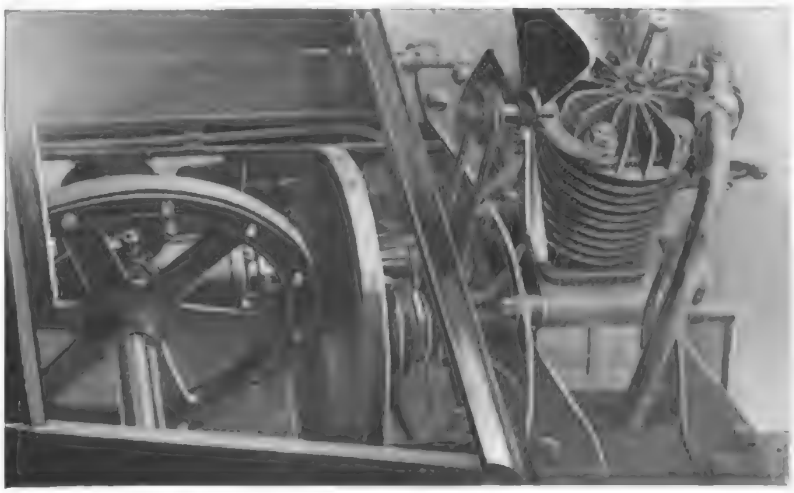


Air-Cooled
Four Horse-Power
10-inch Clearance
Speed, 30 Miles an Hour
Climbs 40 per cent Grade
Weight, 600 lbs.

Starts Easily
Numberless Speeds Forward and Reverse
Fan on Engine
Oils From Seat
Elliptic Springs
Semi-Rigid Frame

A Remarkable Motor Car for $400

As noiseless and free from vibration as a 4-cylinder touring car. Will climb grades and drive through sand and mud that no other motor car of any horse-power can negotiate. Its maximum driving ratio is 40 to 1. A high-powered touring car is but 18 to 1.



DRIVING MECHANISM

GASOLINE CONSUMPTION
30 Miles to One Gallon

OIL CONSUMPTION
90 Miles to One Pint

OPERATING COST
Half a Cent Per Mile

REAR VIEW 1906 BUCKBOARD

Responsible Dealers desired in unassigned territory
Write for Catalogue and Agency Proposition

Waltham Manufacturing Company

General Offices and Factory - WALTHAM, MASS., U. S. A.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

image
not
available

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

has arrived and is now on exhibition at our showrooms. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. Equal to any car, built in any country at any price. Make and break spark. Sims-Bosch Magneto. Bevel gear drive. Continental Tires. Aluminum bodies.

MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway and 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wanted in Unassigned Territory

Digitized by Google

Volier Horns

¶ The *reeds* are what stick most horn makers. Successful metal mixtures and tempering processes for horn reeds are the secrets of a very few men. The non-corrosive, vibratory metal reeds in genuine Volier Horns, which are unaffected by weather and which keep their tone indefinitely, are a feature which alone make Volier Horns superior to any other horns offered in America; *but*, in addition, there is the matter of

¶ The *bulbs*. In ordinary horns the bulbs are steam cured. They split and crack from use and vibration. In Volier Horns the bulbs are *chemically* cured — another secret process. The *chemical* curing makes Volier bulbs soft, pliable and tough. Volier bulbs do *not* split or crack.

¶ Horn fashions are set by the Volier, which we exclusively import from France. Witness the "Dragon" horn craze this season, founded on the Volier "Dragon."

¶ We can now give you illustrations and quotations on the 1906 Volier styles.

The Post & Lester Co.

Hartford, Connecticut

SOLE AMERICAN DISTRIBUTORS

CADILLAC UTILITY

The single-cylinder Cadillac
will climb any hill that any automobile will climb.

The single-cylinder Cadillac
will travel as fast as anybody ought to ride.

The single-cylinder Cadillac
will travel any road that any automobile will travel.

The single-cylinder Cadillac
Costs less to operate
Costs less to maintain
Requires less attention
than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined and won for them the unquestioned distinction of

America's Leading Motor Cars

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JAN. 13-20, 1906

CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

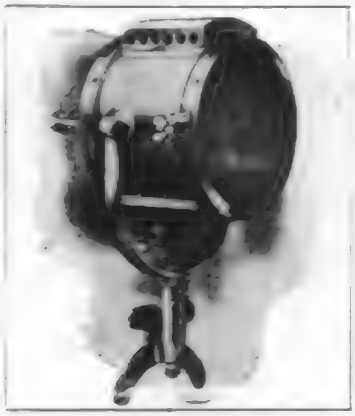
Member Association Licensed Automobile Manufacturers.

Digitized by Google

WHAT WOULD YOU THINK OF A

Carbureter

which drank a gallon of gasoline in every five miles, and wouldn't stay adjusted? You wouldn't want it as a gift, would you?



And yet you will buy a searchlight with a silver plated reflector, which reflects, maybe, 10 percent of the light from the flame, and reflects next to nothing unless you keep constantly polishing it. And you don't even polish it, because it is too much trouble. You let it tarnish, and at night you take your chances.

Is this common sense?

The Rushmore Navy Standard Searchlight has a lens mirror, scientifically ground to throw the light straight forward. It never needs polishing. Having a shorter focus than any other, it is closest to the flame and utilizes the maximum percentage of light.

For the actual illumination given, it is the cheapest lamp made.

Sent on ten days' free trial.

Rushmore Dynamo Works

PLAINFIELD, N. J.

Haynes

Exclusive Features that Appeal to Discriminating Buyers

Model "R." Four-Cylinder Touring Car

Roller bearing vertical engines. Cylinders 5¼"x6"; 50 H. P. Cast separately. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carbureter, which assures perfect mixture in all temperatures and under all climatic conditions. Master Clutch that has no leather surfaces to wear. Takes hold easily and gradually without jerking. Shaft drive. Exclusive universal joints that do away with wear on pins, run in housing packed with grease. One piece nickel steel rear axle with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless; all in a bath of oil. Roller bearings throughout. 108-inch wheel base. 50-inch tonneau with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight 3,750 pounds. Price $3,500, F. O. B. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906—HAYNES—roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10% loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of preëminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears, the transmission device never allows the momentum of the fast-moving car to be thrown against the power of the engine with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Grey curled hair and hand-buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are some reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue Number 11, sent prepaid upon request.

"The Car that the Repair Man Seldom Sees"

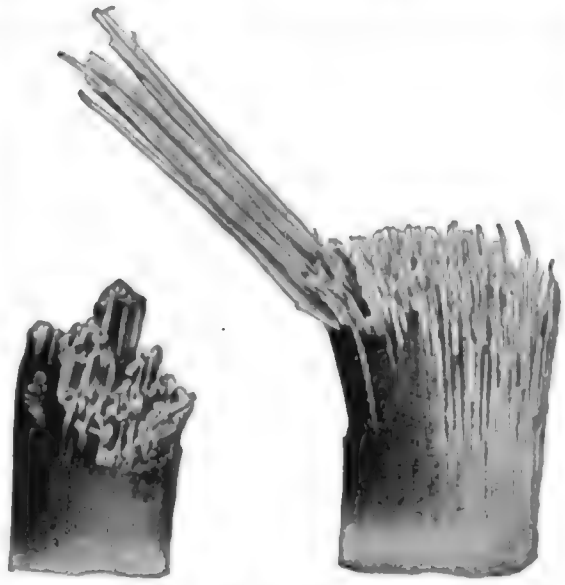
The Haynes Automobile Co.

KOKOMO, INDIANA

CHICAGO: 1421 Michigan Ave. NEW YORK: 1715 Broadway

Members A. L. A. M.

Digitized by Google



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spokes.

Talks on Wheel Making No. 7

A bursted tire is robbed of its danger if the car is equipped with "Imperial" wheels.

Don't lull yourself into a sense of false security by imagining that all wheels rank alike. Read what the *Horseless Age* has to say on the subject:

> "As an illustration of what can be accomplished by suitably disposing material, no better example can be found than the wood wheels fitted to motor cars. No part of the car has its material subjected to stresses under a greater variety of conditions. True, there are wheels which are of no value; wheels, in fact, which have no factor of safety and are ready to collapse at the first turn; but they are not the wheels one ought to find on a car."

Collapse is usually traceable to two causes—defective material or unsound construction. And sometimes to both.

The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

IMPERIAL WHEEL COMPANY

FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio

The Trouble-Proof GENERATOR

that describes the RUSHMORE

In the Patented Shaking Grate, Regulating Chamber, and Safety Vent it solves the problem of a perfectly automatic portable generator.

It gives a gas supply as steady as that in your house.

It maintains the pressure undiminished till the carbide is wholly consumed.

It stops generating when you turn out the lights.

It preserves the unused carbide indefinitely without waste.

And it does all this automatically, without adjustments, and with no attention save to empty out the dry lime dust and refill with water and carbide—the work of a moment.

Just compare this with the antics of your present generator and then write us for catalog telling why the Rushmore is unique among its kind. Three sizes, holding 1¼ lbs., 2½ lbs. and 5 lbs. of carbide.

Rushmore Dynamo Works

Plainfield, N. J.

Digitized by Google

An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. **All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new.** His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with **Goodrich Tires, 3x30 inches.** I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

The B. F. Goodrich Co.

AKRON, OHIO

New York, 66-68 Reade St. and 1895 Broadway
Buffalo, 731 Main St. — Cleveland, 416 Erie St.
San Francisco, 309 Mission St. — Chicago, 141 Lake St.
Boston, 161 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

Bargain-Hunting

applied to Motor Cars is a study of human nature.

¶ In the purchase of an Automobile, as in everything else, there are two extremes to which the buyer may go.

¶ First—Rabid Extravagance, which carries the purchaser to an exorbitant price for a 4-cylinder car.

¶ Second—Rank Economy (always the most expensive in the long run)—which takes the bargain hunter to a 4 cylinder car at a low and impossible valuation.

—THE—

Stoddard-Dayton

"Again as good as it looks"

AT $2250 IS

an honest commercial value between the two extremes.

¶ It is the right car at the right price, with the right kind of Guarantee back of it to insure your protection and absolute satisfaction.

¶ Our 1906 Catalogue is as instructive as a course of tuition with a correspondence college.

¶ It tells all there is to say and shows all there is to see about the 1906 Stoddard-Dayton line, including Touring Car, Runabout and Limousine.

¶ Write for it. It's Free.

Dayton Motor Car Co.

DAYTON, OHIO

Digitized by Google

E. P BLAKE CO

69-72 AUDUBON STREET

Boston Mass Nov 4, 1905.

Jackson Automobile Co.,

Jackson, Mich.

Gentlemen -

We are sending you today under separate cover a photograph of a 'Jackson' car that has been run this season over 10,000 miles by the odometer. We really believe it would pay you to get this into the Trade Journals if the expense is not too much.

You wrote us sometime ago that you would have either the Model 'C' or 'D' made with detachable tonneau with fish-tail dash. Have you as yet decided which model you will have in this way? If so, kindly write us the price of machine without the tonneau. We believe it would be advisable to have the cheaper car with detachable tonneau.

Yours respectfully,

E. P. BLAKE COMPANY

Per E. P. Blake

Enc: 298-9

P. S. The tires on this car are Diamond detachable. The two front tires have never been touched and the two rear tires have been retreaded once. This car is owned and driven by Mr. H. H. Bates, Brockton, Mass

THE accompanying letter and picture explain WHY every agent we had on our list for 1905 has contracted for Jacksons for 1906; ¶ *Why* every "Jackson" driver is an advertisement; ¶ *Why* you, if you have the auto fever, should buy the Jackson; ¶ *Why* the Jackson has the world's record for five miles on a circular track for two-cylinder cars; ¶ *Why* the Jackson won second in the non-stop run from Chicago to St. Paul.

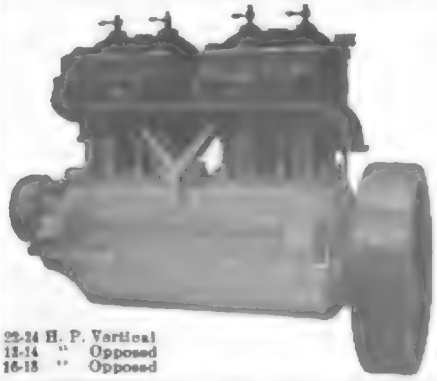
THREE MODELS:

MODEL "C" $1250.00, 20-24 H. P.
MODEL "D" $1500.00, 20-24 H. P.
MODEL "G" $2500.00, 40-45 H. P.

OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.
L. C. Howard, 1655 Broadway, N. Y.
Ormond Auto Co., Brooklyn, N. Y.
E. P. Blake Co., Boston, Mass. New England distributors.
East Liberty Auto Co., Pittsburg, Pa., 5969 Centre Ave.
Diamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.
E. K. Hauser, 1233 New York Ave., Washington, D. C.
C. R. Dench, Erie, Pa.
Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.
Paxson Motor Car Co., Cleveland, O.
Hagmann & Hammerly, Chicago, Ill.
Seidler-Miner Auto Co., Detroit, Mich.
The Jackson Auto Co., 3685 Olive St., St. Louis, Mo.
Chas. R. Johnson, Coldwater, Mich.
Chas. T. Bisch, Springfield, Ill.
The Motor Car Co., Minneapolis, Minn.
Sioux Falls Auto & Supply Co., Sioux Falls, S. D.
The David Bradley Co. of Wisconsin, Fond du Lac, Wis.

JACKSON AUTOMOBILE CO., :: Jackson, Mich.



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,450

8 H. P. Tourabout
$780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 mm. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.
TARRYTOWN, N. Y.

Central Western Representative:
A. F. CHASE.

Members of American Motor Car Manufacturers' Association.
Agents in Principal Cities.

New York Agents:
MAXWELL-BRISCO, INC.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Compound Doctor's Stanhope

A Doctor Can't Afford To Take Any Chances

Free from NOISE and VIBRATION

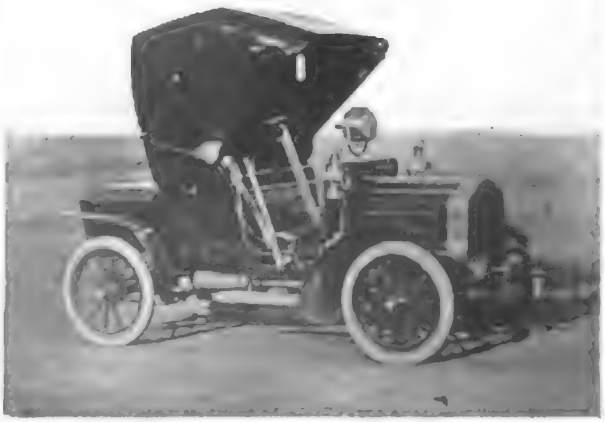
Price, $1,400.00

12-15 H. P.

The use of any of our models ensures Endurance and Reliability.

Only the very best material obtainable, assembled by the most expert mechanics, enters into its construction.

Chassis is the same as used in our Model Four, Light Touring Car, which carried five people in the New York Motor Club's recent Economy Test and defeated every touring car entered.



THE E. H. V. CO., Middletown, Conn.

Digitized by Google

National

Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made **1,094 3-16 Miles in 24 Hours,** breaking the former World's Record by 78 9-16 miles, and **1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second,** breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**

Model D—NATIONAL—One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

National Motor Vehicle Co.

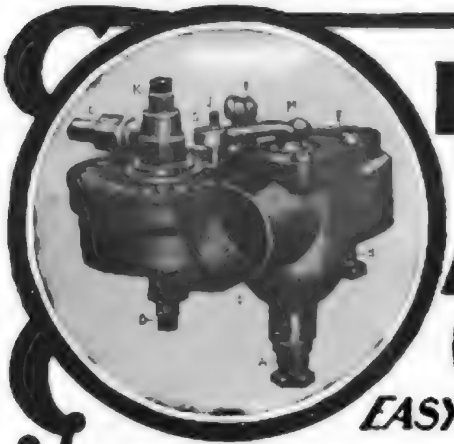
1006 E. 22d St.

INDIANAPOLIS, IND.

Member American Motor Car Mfrs. Association, Chicago

DISTRIBUTORS:

Ralph Temple Auto Co., 310 Michigan Ave., Chicago
Linscott Motor Co., 165 Columbus Ave., Boston
Homan & Schultz Co., 38th St. & Broadway, New York
Tioga Auto Co., Broad & Tioga Sts., Philadelphia
Liberty Auto Co., 138 Beatty St., Pittsburg
Nat'l Motor Car Agency, 705 S. Main St., Los Angeles



KINGSTON

1906 TYPE-K- AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 31,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,

KOKOMO, INDIANA, U. S. A.

Digitized by Google

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

24 h. p. Berg Touring Car

IMMEDIATE DELIVERY MEMBERS A. L. A. M.

"The Open Show That Must Be Seen"

SIXTH ANNUAL AUTOMOBILE CLUB SHOW

of the Automobile Club of America

New York City, Jan. 13 to 20, 1906

Sixty-ninth Regiment New Armory

Twenty-sixth Street Near Fourth Avenue

Leading American and Foreign Exhibitors

GASOLINE · STEAM · ELECTRICITY

The Up-to-date Exposition of a Great Industry

Digitized by Google

This AUTO TIRE has no BAD HABITS

It won't creep—it won't rim-cut—it won't come off the rim when run deflated, no tire bolts required to hold it on the rim—and you can take it off or put it back in 30 seconds, using nothing but the hands. And it's a Tire, besides, that's as resilient as a "soft" tire, and will outwear most "hard" tires.

Sounds like a fish story, doesn't it?

But it's a *fact*, nevertheless.

Barney Oldfield didn't believe it, either, but he does now.

We *showed* him—he saw with his own eyes—and now he uses the Goodyear Detachable Auto Tire with the Universal Rim in all his races.

He used this tire at the Boston meet on Sept. 9th, where he made five miles in 4:55 and a mile in :55 1-5—breaking the track record.

You ought to hear Barney's chaffeur sound the praises of the Goodyear Detachable to all who will listen to him—hear him tell how reliable it is—how it saves him time, trouble and worry and makes his position easy. He says he never thought it possible (before using the Goodyear) to embody all the good points a tire *ought* to have in one single tire.

We wish you could come with us to the factory or to one of our branch stores. Then you could see in no time for yourself just why and how these things are true. You can "see through" it all instantly when the tire is before you.

We'll try, however, to explain just *one point*, here.

Why the Goodyear Detachable Auto Tire is *Durable* and *Resilient* at the same time.

Look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it.

Now right underneath this is the remainder of the outer casing (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask

Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, Akron, Ohio

Branches in following cities: Boston, 8 Merrimac St.; New York, 251 West 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 East Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 49 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. P. Moore & Co., 506 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 230 Sixteenth St.; Detroit, 262 Jefferson Ave.

We furnish ALL SIZES of Tires with BAILEY TREADS, if desired

1906 Models Ready for Delivery

THE LAMBERT

The Famous Friction Drive Car

It will pay you to investigate the Lambert for two reasons:
1st. Simplicity of Construction 2d. Cost of maintenance

NO COMPLICATED PARTS

We are booking orders on the following models:

Model 8. 34 H. P. Heavy Touring Car	$3,000
Model 7. 34 H. P. Touring Car	$2,000
Model 6. 18 H. P. Touring Car	$1,500
Model 5. 16 H. P. Touring Car	$1,200
Model 4. 16 H. P. Light Touring Car	$1,050
Model A. 16 H. P. Runabout	$900

Model 7. 34 H. P. Price, $2,000

A Gearless Transmission

This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau.
Write for descriptive matter on the above models.

THE BUCKEYE MANUFACTURING CO., Anderson, Indiana

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google

STANDARD RIMS

We are equipped to produce rims for special rush orders and give same our immediate attention.

SPEAK FOR THEMSELVES

THE STANDARD WELDING CO: CLEVELAND

The Hartford Dunlop Automobile Tire

S.S. "LA BRETAGNE".
WE'RE OFF FOR HOME.
PARIS THRO ROUEN TO HAVRE
TO CATCH THE STEAMER BUT THE DUNLOPS STOOD THE
TRAIN AND HAVE CARRIED US FROM NAPLES TO THE
ATLANTIC WITHOUT HAVING TO REMOVE THE EXTRA
CASINGS FROM THE SIDE IRONS
Aug 6. 1905 Walter Hale

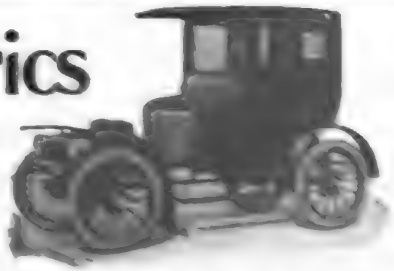
Postal No. 5 Watch for Others to Follow

The Hartford Rubber Works Co., Hartford, Conn.

Digitized by Google

Stanhope

Baker Electrics

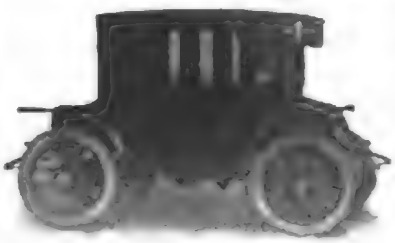


Depot Wagon

embody every possible good feature required to make them what they are so frequently called —

The Aristocrats of Motordom

Every particle of material used is the best that money can buy. The workmanship is perfect, the upholstery and exterior finish superb. All wearing parts are equipped with ball bearings, reducing friction to the minimum and insuring smooth, easy running cars. The perfect mechanical construction of BAKER ELECTRICS enables us to use fewer battery cells than any other electric vehicle, at the same time securing greater efficiency and lowering the cost of maintenance. Their beauty of finish, quiet running qualities and simplicity of operation make BAKER ELECTRICS ideal for town use.



Inside-Driven Brougham

We desire agents in a few important cities not yet covered. Write for particulars.

IMPERIALS, STANHOPES, SURREYS
DEPOT WAGONS, BROUGHAMS

The Baker Motor Vehicle Co.

24 Jessie Street :: CLEVELAND, OHIO

Outside-Driven Brougham

MICHELIN

Tires of the Highest Class

Mr. Wilbern sends the following unsolicited testimonial:

Cincinnati, O., Nov. 3, 1903.

MR. E. D. WINANS, Sec'y & Gen'l Manager, Michelin Tire Co. of New York.

Dear Sir:— Thirty thousand miles on Michelin tires, covering twelve countries in Europe, above the clouds in Switzerland, below the sea in Holland, from bull fights in Spain to chicken fights in England, down historic Rhine, and back again to the "land of grind organ and Monks." I have bought all kinds of tires, every known make; but the Michelin are the best, last the **longest.**

With pleasure I can recommend them to all tourists. Will tour again next spring and summer in Norway, Sweden, England, Ireland and Scotland, and will wear nothing but MICHELIN tires on my 40 H. P. Hotchkiss.

Very truly,
(Signed) Edward V. Wilbern.

Director "Providence Savings Bank and Trust Co." Cincinnati, O.

If you want the Best, follow Mr. Wilbern and buy MICHELIN TIRES

MICHELIN TIRE AMERICAN AGENCY, Inc.

E. D. WINANS, Gen'l Mgr. 6 WEST 29TH STREET, NEW YORK Telephones: 760-761 Madison Sq.

Branches in principal cities of United States

Digitized by Google

Pantasote
LEATHER

An Ideal Material for Automobiles and Motor Boats

For Seatings — Pantasote Leather wears better than the natural hide, it contains no oils to dry out, and is impervious to weather; will not crack, peel or chip.

For Canopy and Cape Tops — Pantasote Top Materials give a handsome finish to the car, are more durable than the real hide, absolutely water, stain and grease-proof, and vastly superior to the various rubber and inferior imitations of leather, as Pantasote always remains soft and pliable, and is not affected by climatic conditions.

Send for samples of the new and complete 1906 line

The Pantasote Company

11 Broadway
NEW YORK

926 Monadnock Bldg.
CHICAGO

PENNSYLVANIA CLINCHER

"No car is faster than its tires."

"Tire troubles place a fast car in a class with the farm wagon."

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

Northern

¶ The same practical advantages which distinguished the Northern Touring Car for 1905 will characterize the 1906 products, viz.: Quietness in operation, ease of riding and remarkable freedom from vibration and dust.

Silent Northern Touring Car, 20 h. p., 5 passengers, 4-inch tires, gas and oil lamp equipment, $1,800

¶ The Silent Northern still stands alone as the car of simplest and most compact mechanism. Its encased mechanism, three-point motor support, and 24-inch fly-wheel with fan blades cast integral have demonstrated again and again their efficiency and vital importance.

¶ Power applied direct to rear axle—only one universal joint. No belts—no chains—no gaskets. No truss rods—no strut rods—and no side levers.

1906 MODELS—Model "K" 30 h. p. Touring Car with gas and oil lamp equipment, $3,000. 20 h. p. Limousine, $2,500. 20 h. p. Touring Car with gas and oil lamp equipment, $1,800. 7 h. p. Sturdy Northern Runabout with lamp equipment, $650.

Write at once for Circular 14 containing important advance information.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member Association Licensed Automobile Manufacturers.

KELLEY-HUNTER CO., 1449 Michigan Avenue, Chicago Agents

We will exhibit at Madison Square Garden only January 13th to 20th, 1906.

FISK MECHANICALLY FASTENED TIRES

are receiving more favorable comment today from competent judges of tire qualities than all other makes combined.

It is because we know how to build tires that will insure the user Comfort, Safety and Tire Economy.

No matter how much you have enjoyed your car in the past, Fisk Tires will surely add to your pleasure by physical and mental relief — and lessen your tire maintenance by half.

They Ride Easier, Wear Better, and Have Been Proven Safer Than Any Other Tire Made.

Have you ever tried them?

The Fisk Rubber Co., Chicopee Falls, Mass.

BRANCHES

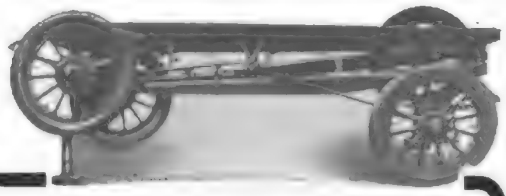
New York, 754 Seventh Ave.
Boston, 226 Columbus Ave.
Springfield, 40 Bridge St.
Philadelphia, 138 N. Broad St.
Minneapolis, 704 Hennepin Ave.
Atlanta, 103 N. Pryor St.
Syracuse, 423 E. Clinton St.
Buffalo, 893 Main St.
Cleveland, 318 Euclid Ave.
Los Angeles, 1034 Main St.
Detroit, 254 Jefferson Ave.
Chicago, 1251 Michigan Ave.
Kansas City, 1330 Main St.
St. Louis, 3906 Olive St.
San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

Digitized by Google

THE MARMON

"A Mechanical Masterpiece"



Front wheel and opposite rear wheel each raised over a foot.

"Only Hit the High Places"

Good old familiar automobile talk—means speed that's the next thing to flying.

But there is a time when it ceases to be a joke.

Anyone that has ever sped over country roads in a machine depending altogether on springs for its flexibility knows what "hitting the high places" means—keeps the people in the tonneau in the air, occasionally "hitting the high places" of the machine.

And what does it do to the machine of the rigid type? Does it seem reasonable that the constant pounding and inevitable twisting, binding strains are good for costly mechanism?

The picture here shown demonstrates that the running gear of the Marmon adjusts itself naturally to all road conditions. It rides into depressions and over bumps without subjecting the mechanism to binding, twisting strains. And at the same time it affords its passengers a freedom from jar, jolt or vibration—a very luxury of motion—unknown in any other car, regardless of price or prestige.

This flexibility is supplemented by full elliptic springs (which bear no driving strain), but it is primarily due to the exclusive **patented** feature,

Double Three-Point Suspension

Luxurious cast aluminum body on one frame, power plant on another frame, **each frame** suspended on three **pivotal** points. Over the roughest roads, the power plant and rear axle are maintained in perfect alignment. Rigid shaft drive (without universal couplings) and an inner driving axle that bears no weight, deliver a higher percentage of power to the wheels than is possible in any other scheme of transmission.

The natural flexibility of the Marmon conserves the strength of all parts. Its considerate treatment of the tires is a thing that Marmon owners never fail to commend.

The Marmon oiling system is unfailing; simple; has no adjustments. Starting and stopping with the engine a constant, a uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and **piston pin** bearings. One gallon of oil runs the Marmon from 600 to 1,000 miles.

Four cylinders; air-cooled; stylish, strikingly handsome and very quiet. Replete with features that appeal instantly and forcefully to all who seek a high-grade car.

Write for Booklet No. 1 and get acquainted, at least, with the one really modern automobile.

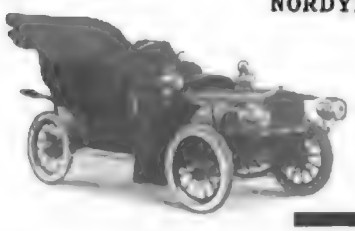
We shall demonstrate at the Armory Show, New York.

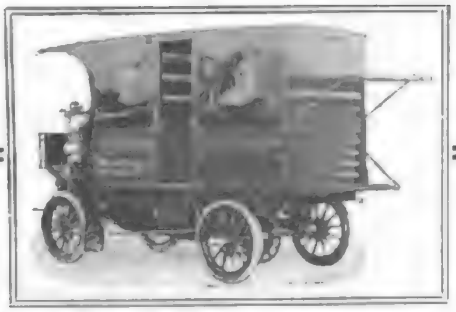
NORDYKE & MARMON CO.

Established 1851

Indianapolis, Ind.

Members American Motor Car Manufacturers' Association





KNOX CARS

Deliver the Goods

They run all day long any day in the year, being air-cooled by the only perfect system extant.

They furnish the quickest and the cheapest method of local delivery.

Every wide-a-wake merchant should

Buy a Knox Waterless Car
Save Money and Be Up-to-Date

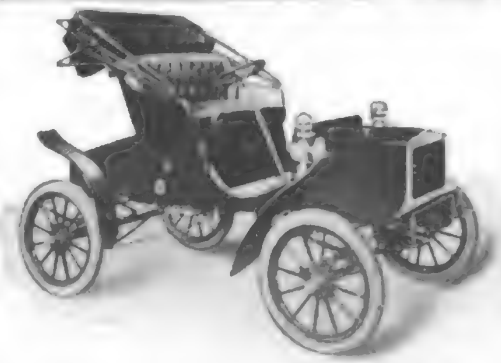
A handsome Knox car is an effective advertisement of any business. Besides, it is sure to give absolutely reliable service.

Concise pamphlet, "Commercial Car Tests," on request.
Free demonstrations on request at our agents.
Agents in all principal cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars
We Exhibit in New York at Madison Square Garden Only, Jan. 13-20, 1906
Member of A. L. A. M.

GALE



1906 Model "D" **$650** Minus Top $600

WHEEL-POST CONTROL. ROLLER BEARINGS to rear axle
ANY TIRES. 28x3. Pneumatic, Solid or any other kind
Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

WESTERN TOOL WORKS GALESBURG ILLINOIS

Digitized by Google

CUMMER LUMBER COMPANY

Jacksonville, Fla 8-14-05

The Continental Caoutchouc Co.,
43 Warren St., New York, N.Y.

Gentlemen:-

I feel it is due you to give you my experience with your tires on my National 1905 touring car.

During the month of July I ran this car 1600 miles on a tour which took me through New Jersey, and over the 1905 Glidden Cup Route through New England. I was not a participant in the Touring Contest, but simply selected this route as it appealed to me. During this run I had but one puncture, caused by a nail; and, with this exception, the tires were not pumped up on the entire run, and are apparently in as good condition as when I started. The car was fully loaded at all times, and on several days was driven through very muddy roads.

I take pleasure in stating that I am highly pleased with the results secured from your tires, and I feel under great obligations to Mr. Fred. E. Gilbert of this City, who handles your goods, for advising the use of Continental Tires on my car.

This letter is all the more sincere from the fact that it was not solicited by you in any way.

Yours very truly,

N. B. Cummer

FROM
Warm Florida
TO
Cool New Hampshire

during the most trying season of the year for tires was a pleasant trip. That was due to the use of

Continental Tires

Were your trips as pleasant this season?

The CONTINENTAL CAOUTCHOUC CO.
EMIL GROSSMAN, Gen'l Mgr.
43 Warren St., New York
Factory, Hanover, Germany

The Incomparable WHITE
The Car for Service

HAVE you read in White Bulletin No. 11 the account of the trip of Extra H. Fitch and his party in three White steamers through the forests of Maine and Quebec? If a White car can be depended upon to traverse forest trails, to ford streams, to travel through a desolate region hundreds of miles from any base of supplies, can it not be relied on implicity for such service as you require from a car?

If you have not seen Bulletin No. 11, you had better write for a copy.

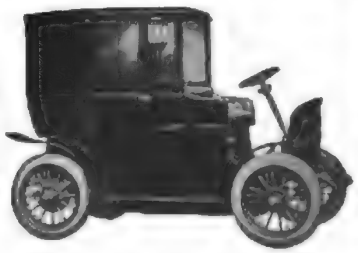
WHITE SEWING MACHINE COMPANY CLEVELAND OHIO

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

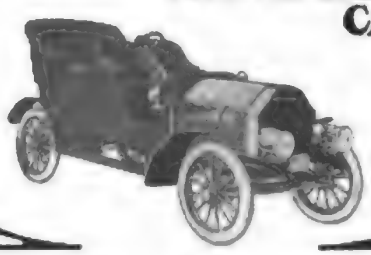
Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY Members Association Licensed Automobile Manufacturers **Hartford, Conn.**

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington R. V. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

GAS-AU-LEC

"THE SIMPLE CAR"



Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the Best Materials Obtainable

THE SIMPLEST GASOLENE CAR IN THE WORLD

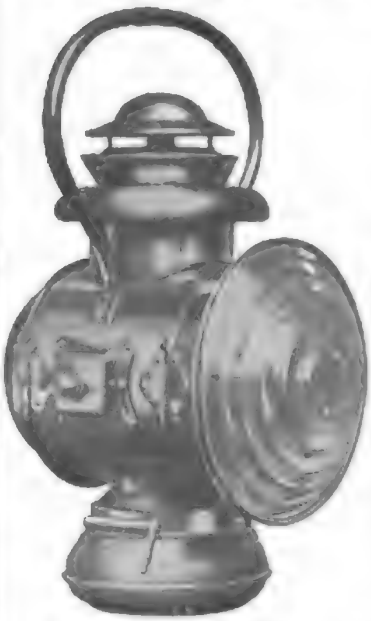
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction"

40-45 Horse Power, $5,000

CORWIN MANUFACTURING COMPANY
PEABODY, MASS., U. S. A.

ALWAYS A BRIGHT ROAD AHEAD



When you are back of the

"Ham" Lamps

Our **TOURIST** Lamp for 1906 is the greatest light producing oil lamp ever made.

See the Lens?

Excellent emergency lamps when your acetylene lamps fail you.

Profit by our 35 years' experience and avoid lamp troubles by insisting on having "HAM" Lamps on your car.

Write for booklet showing complete line.

C. T. HAM MFG. CO. ROCHESTER NEW YORK

"CRAWFORD" MOTOR CAR

Manufactured by the originators of the well known "Crawford" bicycles

The High Powered Runabout for City and Country Use.
2 cylinder upright actual 10 h. p. Wheel base, 78 inch.
Ball bearings throughout.
2 speeds ahead and reverse controlled by one lever.
2 powerful foot brakes.
High grade workmanship throughout.
Write for catalog.

Price, $850

CRAWFORD AUTOMOBILE CO. **Main Offices and Factory: Hagerstown, Md.**

New Amsterdam Motor Transportation Co., 152 W. 58th St., Sole representatives for New York City and vicinity

Digitized by Google

The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car.

Yours truly,
THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

"GEECEE," The Sparker

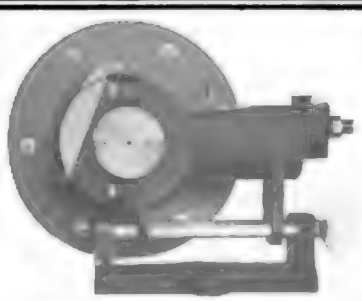
This battery is unequaled as an ignitor

It is higher in capacity and voltage than any wet battery now on the market.

The Electorlyte (acid) is in suspended form. It is made dry by a special process, enabling it to retain its moisture indefinitely.

Therefore it will never shock you by leaking out and ruining clothing, connections and anything else it comes in contact with. You have no such protection in the use of a wet battery.

Royal Battery Co.
NEW YORK
National Sales Corporation, Factory Sales Mgrs., 256 Broadway, New York



The P. T. C. Power Tire Pump

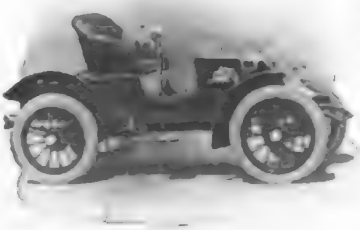
It is designed to inflate pneumatic tires by POWER driven by friction from fly wheel. Always in place. Started by turning a screw. Write for circular.

The Pacific Tucking & Manufacturing Co.
471-3 18th Street, BROOKLYN, N. Y.

Digitized by Google

ADAMS-FARWELL

The Car with Revolving Air-Cooled Motor



We have not operated our Motors over good and bad roads for seven years without arriving at definite results. The results are mentioned in letters received from some of our customers who own 1904 and 1905 cars.

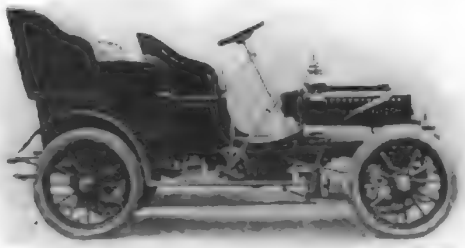
20-25 horse power and 40-45 horse power

Six Models, $2,000 to $4,000

Chicago Salesroom: 1836 Michigan Avenue

THE ADAMS COMPANY

Dubuque, Iowa, U. S. A.



Wolverine D

Double-opposed Motor Under the Hood

Bevel Gear Drive

3-speed Sliding Gear Transmission

18 Horsepower (Actual)

Price, $1,250.00

Wolverine Automobile and Commercial Vehicle Company

Dept. "C." Dundee, Mich.

MOLINE for 1906

Model "A" 30-36 H. P. $2500.00

Model "C" 18-20 H. P. $1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. $1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

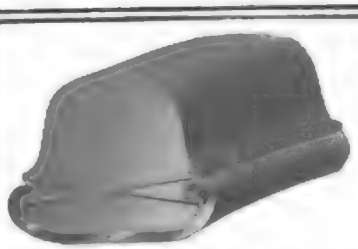
All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way.

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.

Advance circular ready for distribution.

Moline Automobile Co.

EAST MOLINE, ILLINOIS, U. S. A.



Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types

and made to fit any standard clincher rim in which pneumatic tires are used

OBSERVE THE FASTENING DEVICE

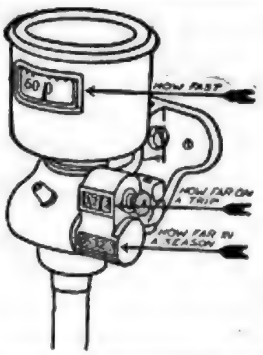
Tire Fastener for Ordinary Work

RESILIENT AND "THERE WITH THE WEAR"

The Motz Clincher Tire & Rubber Co.

AKRON, OHIO, U. S. A.

Digitized by Google



THE AUTO-METER

for your new 1906 car

will tell **how fast** it can travel, **how far** it travels **on a trip, how far in a season.**
This information will be accurate and will help to determine positively

SPEED and DISTANCE

enabling you to get a line on the car.

Then there's the pleasure of it. Thousands of automobilists all over the country use the Auto-Meter and thousands more will use it next year. It has become an indispensable adjunct to a car. Write for a catalogue now and get ready for next year.

WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1631 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.

SOLARS

FOR AUTOS CYCLES OR LAUNCHES

MR. DEALER: Why not handle a line that you know will satisfy your customers instead of taking chances on "just as good" lamps. YOUR profit is as MUCH or MORE on Solars, and your customers "stick." Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO.

New York Office, 11 Warren St. KENOSHA, WIS.

BERKSHIRE AUTOMOBILES

High Class Touring Cars

Made and Tested in the Berkshire Hills

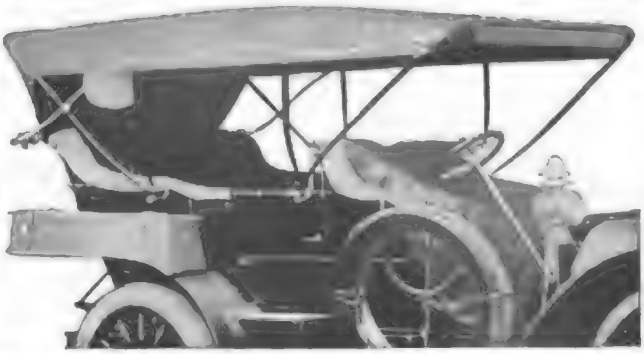
1906 Models Ready December 15th.

16 H. P. $2,000. 25 H. P. $2,500. 40 H. P. $4,500.

Douglas Andrews Company,

SELLING AGENTS.

1623 BROADWAY, NEW YORK.



'06 Cars

Won't be complete unless equipped with a top of some make. Why not specify **LONDON TOPS**? They are absolutely dependable as to design, material, fit and workmanship.

Nothing better can be produced.

London Auto Supply Co., 1229 Michigan Ave. CHICAGO

Chicago Agents for the

St. Louis Supplementary Spiral Springs

Digitized by Google

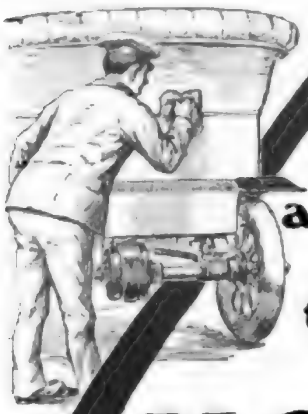
Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in.... WILKES-BARRE, PA.
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....Holyoke, Mass.

MATHESON MOTOR CAR CO.



Keep it new and bright with the new cleanser

MOBO

Elbow grease and common soap will not preserve the polish of an automobile. It may remove the dirt—but the shine goes too. Mobo is unlike any other substance for cleaning automobiles, preserving and restoring the original lustre; removing grease and travel stains. Mobo is a preserver—it prevents blistering and cracking of the painted surface. Absolutely harmless to the hands Can be used on the leather work of the automobile (also harness) as well as the wood and metal work.

Put up in 2 lb. and 8 lb. cans; also in tubs, half barrels and barrels. If your dealer hasn't it—tell us, we will see that you do get it.

JOHN T. STANLEY
638 W. 30th St. NEW YORK

ELECTRIC

Broughams Landaulets
Victorias Station Wagons
Coaches Ambulances, etc.
Express Wagons
Delivery Wagons
Baggage Vans, etc.
Brewers' Trucks
Dumping Trucks
Machinery Trucks
Hoisting Trucks, etc.

Over One Hundred Standard Designs, One to Six Tons Capacity

VEHICLE EQUIPMENT CO.

Sales Department, General Office and Works
LONG ISLAND CITY, NEW YORK

Largest Builders of Electric Vehicles in the World

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE
With All Goods
Bearing This
TRADE MARK

TRADE KOKUK MARK
REGISTERED

MANUFACTURED EXCLUSIVELY BY
F. S. CARR
74 Pearl Street, BOSTON, MASS.

Digitized by Google

HAVE YOU SEEN THE NEW

KOKOMO

MECHANICALLY - ATTACHED

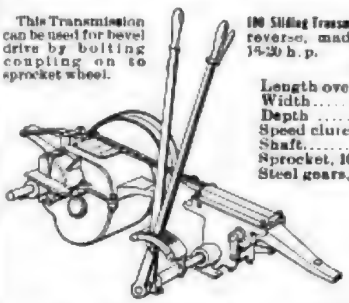
AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

This Transmission can be used for bevel drive by bolting coupling on to sprocket wheel.



100 Sliding Transmission, 3 speeds forward and reverse, made for 2 cyl. Cleveland car, 14-20 h. p.

DIMENSIONS

Length over end supports	24 inches
Width	18 "
Depth	11 "
Speed clutch	13¾ "
Shaft	1¼ "
Sprocket, 10 tooth	1¾x⅝ "
Steel gears, hardened	8 pitch

PRICE
$60.00
NET

The Automobile Supply Company
1339 Michigan Blvd., Chicago, Ill.

E & J

MEANS

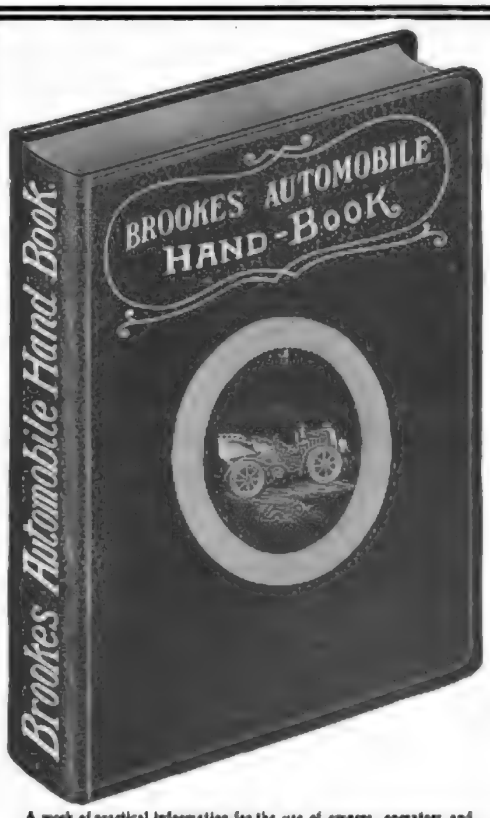
QUALITY
In LAMPS

Lamp No. 70

REGARDING YOUR
1906 LAMP EQUIPMENT

We Guarantee to Please You in Both Quality and Price. Write us.

Edmunds & Jones Mfg. Co.
315 Riopelle Street, DETROIT, MICH.



A work of practical information for the use of owners, operators and automobile mechanics.

FREE

ONE COPY
Brookes' Automobile Hand Book

To everyone who will send two dollars for one year's subscription to MOTOR AGE, and will ask for the above book at the time of ordering. Mail orders with remittances direct to

MOTOR AGE, 309 MICHIGAN AVE., CHICAGO

Digitized by Google

EQUIP YOUR CAR WITH THE PREST-O-LITE GAS TANK

No Waste. No Odor. Tips Never Clog. Needs no Attention.

SIMPLE ENOUGH

When you want gas, turn it on. When you don't, —turn it off.

Extreme Cold Cannot Affect It

ALWAYS READY FOR USE

An Absolute Necessity where Good Service and Convenience are Considered worth while

OVER 5,000 SOLD THIS SEASON — Write for Booklet, List of Agents, Etc.

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.

AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL.

Keep Your Feet Warm

When riding or driving in your Auto use a

LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the standard and best. They burn LEHMAN COAL at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the BEST money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

LEHMAN BROS., Mfrs., 10 Bond St., New York

J. W. ERRINGER, Gen. West. Sales Agt.
48 East Congress St., Chicago, Ill.

SOOTLESS

A NEW SOOTLESS

MICA SPARK PLUG

Indestructible
No Asbestos Packing to leak and get out of order.

Double Explosion Chamber
A new and valuable feature.

Strongest Plug Made
All Threads.

Never Breaks
which makes all other so-called Sootless Plugs very expensive and nearly useless.

Extra heavy lengthwise Mica Insulation.

Doubly Protected on Engine End.

Guaranteed Six Months

Price, $1.75

Manufactured by

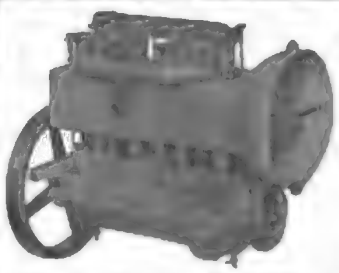
THE OAKES & DOW CO. 40 Sudbury St. Boston, Mass.

EXCELSIOR SUPPLY CO., Chicago, Ill., Western Agents

WE HAVE IT

Absolutely Tested
by all kinds of Herculean Work

Positively Proved
by six months of faultless performance



Cylinders surrounded by Hood with Fan connection on outer end, blowing a

CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

THE DETAILS

15 H. P., developed at 1300 revolutions.
Bore and stroke, 5¼x6 inches.
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¼ inches.
Bearing on Connecting Rods, 7x1¾ inches.
Bearing on Wrist Pin, 1¾x1¾ inches.
Connecting Rods of drop forgings with phosphor bronze Crank Shaft.

Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 39¼ inches.
Center of Crank Shaft to bottom of Motor, 4¾ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Solnik Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

REFERENCE JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

Digitized by Google

The Expected Revolution Has Come

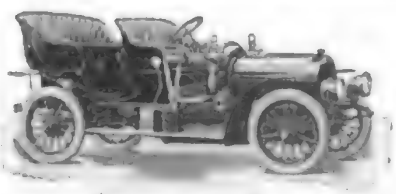
If you can think of a good reason for buying twice the machinery you need in a touring car and paying twice the expense for its upkeep, then you have found the only good reason why you should not buy an

Elmore

You certainly do not want four cylinders if two cylinders will do the same work and produce the same power—and that is precisely the extraordinary efficiency furnished by the two cycle two cylinder Elmore engine. Understand—the two cycle two cylinder Elmore engine produces two impulses every time the flywheel turns. As you know, the two cylinder four cycle furnishes only one impulse every fourth time the flywheel turns. In other words, the revolution which you have been expecting in automobile construction has come—and the perfect engine is here.

You'll realize quick as a flash when you look into the matter that the two cycle engine is a giant stride in advance—and that to cling to the four cycle in the face of the two cycle triumph is to take a step backward. Lose no time in finding out all about this remarkable mechanical achievement. Send for the technical description, stories of the conclusive tests, opinions of agents and users—the history of a tremendous success which has reached its climax this season after five years of steady improvement.

THE ELMORE MFG. CO., 504 Amanda Street CLYDE, OHIO



THE 1906 ROYAL TOURIST. MODEL G.

Comfort *Speed* *Safety*

40 H.P. $3,500.00

Every part of our successful 1905 model has now been redesigned, refined, and, where possible, improved. We confidentially expect our 1906 customers to be even more contented and pleased.

ROYAL

THE ROYAL MOTOR CAR CO.

CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile Supply Co., Lim., Toronto; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.

Member A. L. A. M.

8,000 MILES

Perfect Satisfaction, Never Breaking

HOTEL TOURAINE
BOSTON

July 3d, 1905.

BRAMPTON BROS., LTD.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

1906 CARS

Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars.

Catalogue mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES

Broadway and 38th St., New York. Philadelphia—318-320 N. Broad St. Boston, Mass.—202-204 Columbus Av. Cleveland, O.—408 Erie St.

HOTEL NORMANDIE

NEW YORK CITY **Elmer E. Almy, Prop.**

The noonday rendezvous of the Automobile trade

European Plan.

Very Center of Amusement and Business District.

Broadway and 38th Street

Long distance telephone in all rooms. Single rooms with bath and in suites.

Restaurant noted for the excellence of its cuisine, its efficient service and moderate prices.

$1.50 PER DAY AND UPWARDS

OSBURN HOUSE, Rochester, N. Y.

Elmer E. Almy & Co., Propts. : : : American Plan.

Digitized by Google

THE WHITLOCK COOLER

Tested and Adopted by

90 Per Cent

of the Leading Manufacturers of

HIGH GRADE CARS FOR 1903-1904-1905

Any Design or Style of Cooler Made to Order

THE WHITLOCK COIL PIPE CO.

U. S. Patents Pending. Patented in England, France and Belgium

Hartford - Conn.

No. 66 Non-breakable Mangin Mirror Lens Searchlight Projector with swinging bracket. Burns acetylene gas.

The powerful white light thrown out by

The Neverout

Mirror Lens Searchlight

puts all other light projectors in the shade

The new *Neverout*

Patent Safety Gas Producer

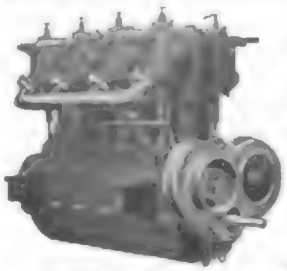
helps to bring this about. It makes a pure, dry gas that gives a steady and intensely penetrating flame

Economical, simple and no danger of explosion

Write for free illustrated catalogue

ROSE MFG. CO.

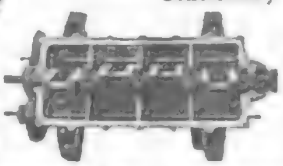
912 Arch St., Philadelphia



"Aster" Motors

From 1 to 60 H. P.

Automobile Motors
Marine Motors
Electric Groups
Stationary

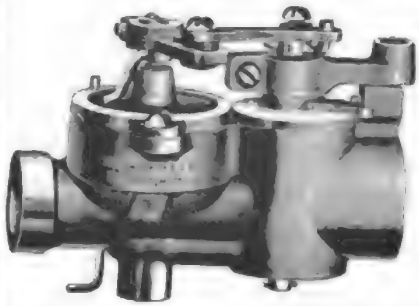


Gas, Gasoline and Kerosene

ASTER CO.,

Office, 1591 Broadway, New York

Garllus Carburetor



Automatic Floatless

Manufactured by

The Winkley Co.

Box 243

Detroit, Mich.

1905 · VESTA · 1905

Ignition Battery

4 Volt, 60 Amp. hours
9¼x3⅝x8⅛. Price, $18.00

6 Volt, 60 Amp. hours
9¼x5¼x9½. Price, $27.00

8 Volt, 60 Amp. hours
9¼x7x8⅛. Price, $36.00

Satisfaction Guaranteed by

VESTA ACCUMULATOR CO.

1336 Michigan Avenue, CHICAGO

Phone South 962

Eastern Agents, THE R. E. HARDY CO. 225 W. Broadway, New York

MOSLER "SPIT-FIRE" PLUGS

They ACTUALLY "SPIT-FIRE" while others spark only

BASE { Facilitates Sparking. Makes Plugs Spit-Fire. Acts as Condenser of Electricity. Protects Insulation and Sparking Points.

STANDARD SIZE, $1.50, Postpaid. SPECIAL, $2.00.

With Patented Protector, $ 50 additional.

Used by the Leading Manufacturers.

INSIST upon Name and Patent Dates.

BEWARE of Valueless Imitations.

THE MOSLER TIMER

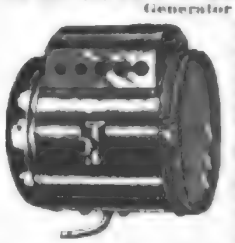
Is Constructed on a Scientific Basis.

WRITE FOR LIBERAL DISCOUNTS.

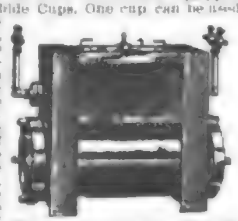
A. R. MOSLER 1679 Broadway NEW YORK

COLUMBIA SEARCH LIGHTS AND GENERATORS

Generator No. 3—Capacity 54 oz.



Will supply from one to six burners. Equipped with two Carbide Cups. One cup can be used on from one to six burners, keeping the other in reserve, or both cups can be used at the same time. When large quantities of carbide are used in the generator, considerable heat is evolved, and it is desirable to keep the generator as cool as possible



We guarantee our Generators to be better than most, and as good, if not better, than any.

Models: A 5-in. Mirror Lens. B 6-in. Mirror Lens. C 7-in. Mirror Lens. D 8-in. Mirror Lens. With Adjustable Burners

HINE-WATT MFG. CO. 58-60 Wabash Ave. Chicago

WRITE

TO

COLUMBIA LUBRICANTS CO., OF NEW YORK,

78 BROAD STREET, NEW YORK CITY,

FOR PRICES AND LITERATURE ON

MONOGRAM OILS AND GREASES

Digitized by Google

"SOOT-PROOF" WINS

Five Prizes Were Awarded to the Cars Using "Soot-Proof" Plugs

The "McMurtry" Prize for the car having the least ignition trouble was awarded to a Reo using "Soot-Proof" Plugs. These cars covered a distance of 700 miles during the National Economy Test of the New York Motor Club, October 30 to November 4, 1905.

These cars had absolutely no spark plug troubles, and the original plugs were used throughout the entire run. Thus again has the "Soot-Proof" Plug demonstrated its superiority, reliability and economy.

"SOOT-PROOF" in Name and Fact
Non-short-circuiting Self-cleaning

C. A. MEZGER
203 W. 80th St., NEW YORK

GARFORD
AUTOMOBILE PARTS

For the present we are obliged to abstain from soliciting orders for touring car parts described in Circulars 12 and 13. We cannot accept further orders for these parts without impairing our ability to meet the late season requirements of customers already booked. It is a vicious commercial policy which openly encourages buyers to expect products which it is privately known they cannot obtain.

We can, however, supply Steering Gears, Brakes and other parts for Power Wagons of all sizes. They are described in Circulars 2, 3, 5, 10 and 11.

THE GARFORD COMPANY
ELYRIA, OHIO
Sales Manager: HAYDEN EAMES, Cleveland, Ohio

Briscoe Radiators
Always in Front

OVER 50,000 are now cooling automobile engines

Our two plants bring Briscoe parts within reach of all automobile manufacturers. They are furnished with duplicate equipment of modern sheet metal working tools.

With our enlarged facilities east and west we are booking quantity orders, and are prepared to meet the delivery requirements of our customers.

Our workmanship remains—the very best. We make
Both Honeycomb and Tubular **Radiators.**
Iron and Aluminum **Hoods** and **Fenders.**
Sheet Metal **Dashes, Seats** and **Mufflers.**
Galvanized Iron and Copper Gasoline and Water **Tanks.**
Sheet Metal Runabout **Deck Boxes.**
Write to our nearest office for estimates.

BRISCOE MFG CO.
DETROIT, MICH. NEWARK, N. J.

FIREPROOF

PORTABLE AUTO HOUSES

MADE ENTIRELY OF STEEL

Protects your car and your property.
Affords a SAFE and HANDY place in which to keep your automobile, SUMMER and WINTER, when not in use.
DOES NOT CONFLICT WITH FIRE ORDINANCES.
DOES NOT BECOME A PART OF THE REAL ESTATE.
Easily erected by unskilled labor and can be moved as often as desired.
By keeping your car at home instead of at a garage (more or less distant from your residence), you are assured that no unauthorized person uses your car, unknown to you.
We make all styles and sizes. Send for catalogue of prices, illustrations and complete particulars. Address

The Lloyd Iron Roofing & Paint Co.
107 West Monroe St. :: Chicago, Ill.

Digitized by Google

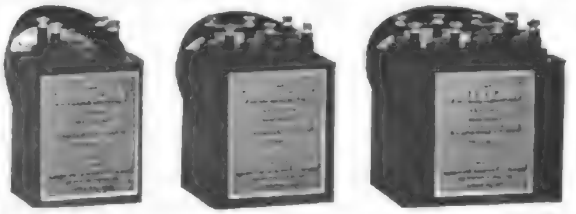
STOLP COOLERS

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

Patents Pending

THE "AMERICAN"
STORAGE BATTERY FOR IGNITION—MONITOR TYPE—



VOLTAGE—4, 6 AND 8. CAPACITY—20 AMPERE-HOURS. PRICES—$6.00, $9.00, $12.00
OTHER STYLES—$3.25 to $22.00.

CATALOGUES ON REQUEST. ESTABLISHED 1899.

AMERICAN BATTERY COMPANY
165 SOUTH CLINTON ST., CHICAGO, ILL.

REPAIRMEN

Our Winter SNAPS LIST of Sacrifices is now ready and goods are offered at sacrifice prices. Here are a few:

4½ H. P. Mobile Steam Engines.
5 H. P. Prescott Steam Engines.
14 and 18-in. Copper Steam Boilers.
Cadillac Front Axles.
Bevel Differential Gears.
Copper Fuel and Water Tanks.
New Tubular Running Gears.

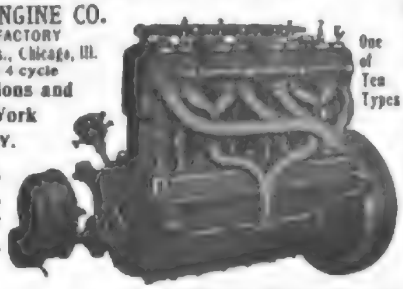
And hundreds of other attractive lots of goods you need. Write us for the SNAPS lists.

Neustadt Auto & Supply Co.
826-830 South 18th Street, ST. LOUIS, MO.

MUD

FORGET IT AND USE
WEED'S TIRE GRIPS.
POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST.
NEW YORK CITY.

MOTORS — All Commercial Sizes
CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.



One of Ten Types

4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.

Telephone North 1607

VERTICAL AND HORIZONTAL

LATEST TYPE **WILLARD** LATEST TYPE

STORAGE BATTERIES

Are operating Electric Automobiles Regularly

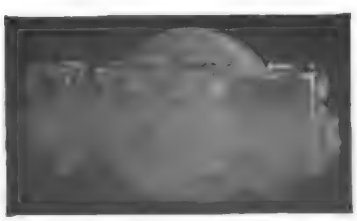
75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI
OHIO

Veeder

ODOMETERS

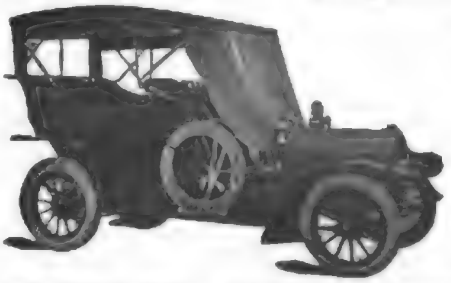
For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

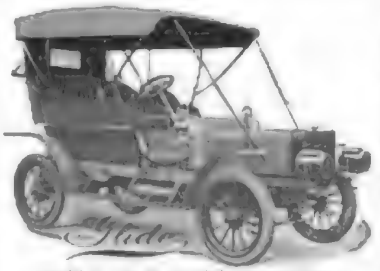
THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

Digitized by Google

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA



Model E. 30 H. P. Glide, Vertical Four-Cylinder Motor

1906 MODELS
Now Ready

Model E is a 30 H. P. vertical four-cylinder car with bevel gear drive.

Model F is an 18 H. P. two-cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS

The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.

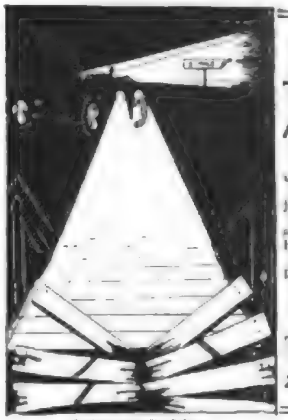
Chicago Representatives, Holmes-Schmidt Motor Co., 1502, Michigan Ave.

PECK PILOTS

Are built to project all the *Light*.
Their construction is a guarantee against future trouble. The Results justify their selection for the finest cars. We aim to give the Strongest Lamp—the best Mirror Reflectors—the best tips and the finest finish of any on the market.
Our prices are reasonable—Why not get the best value for your money.

Prices on application.

THE SCOVILLE & PECK CO., NEW HAVEN, CONN.



Patent applied for

FOR NIGHT RIDING

THE IMPERIAL-LYON
Automatic Lamp Adjuster

It's reassuring on a dark night to know what's around the corners
The Imperial-Lyon Automatic Lamp Adjuster enlightens you
It makes the lamps move with the wheels, so that you'll know what's around the bend before the body of your car swings
Prevents collisions and saves repair expenses
Handsomely finished in solid brass
Fits any car; carries any make of lamp
Drop us a line for circular and prices.

The Imperial Brass Mfg. Co.
249 S. Jefferson St., Chicago

CRAMP

The Winton Front Axle Casting of Parsons' Manganese Bronze
Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp & Sons Ship & Engine Building Company
PHILADELPHIA, PENNA.

HIGHEST GRADE ONLY

Aluminum Castings

THE ALLYNE BRASS FOUNDRY CO.

CLEVELAND AND DETROIT

Baldwin Automobile Chains and Sprockets

Best Material

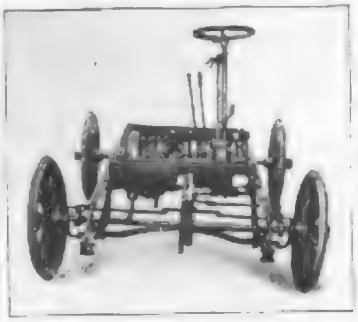
Accurate Construction

SEND FOR CATALOGUE

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

K. Franklin Peterson, Western Sales Agent
106 Lake Street, Chicago, Ill.

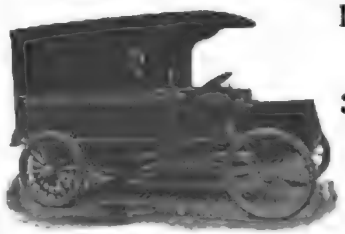
Digitized by Google



Hall's Patent Front Drive and Steering Device
Patented October 1, 1901

STOP
pushing your Auto. Get
FRONT DRIVE
which will PULL your Automobile same as a team of horses.
Also does away with Sticking in the Mud, or skidding on Wet Streets.
Write for full particulars.
For sale at
BECK & CORBETT'S IRON CO.
ST. LOUIS, MO.
Manufactured by
AUTO FRONT DRIVE MFG. CO.
2821 Easton Avenue
ST. LOUIS, MO.

Synnestvedt Machine Company
Pittsburg, Pa. :: Manufacturers of
Electric Vehicles



Delivery Wagons
Trucks
Stanhopes
Surreys
Busses
Eastern Branch, 1005 Drexel Bldg., Philadelphia.
Commercial Automobile Co., Distributors, 1336 Michigan Ave., Chicago.

Automobile Bows
Victoria
Oval Top Express
Flat Top Express

ARE BEST
made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio

Lexington Hotel
22d and Michigan Blvd
Absolutely Fireproof
European Plan—$1.50 and up per day.
The nearest and most convenient hotel to the Automobile District and Exhibition Halls for the February Show—special rates by the week
INTER-STATE HOTEL CO.
Owner & Prop. E. K. Criley, Pres., T. M. Criley, V. Pres., L. H. Fiery, Sec.-Treas.

Force Feed Lubrication
Constant Sight Feed. No Liquids

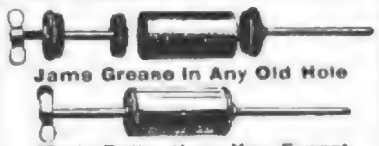
McCord & Co., 1402-80 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

CHICAGO & ALTON RAILWAY
"THE ONLY WAY"

THE CHICAGO & ALTON runs the largest passenger engines in the world
They keep the trains on time
Between Chicago, St. Louis, Kansas City and Peoria
GEO. J. CHARLTON, General Passenger Agent
CHICAGO, ILL.

OLD Tires Made NEW
New Tires Made Puncture-Proof
NEWMASTIC FILLING
For Clincher and Single Tubes
Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn
NEWMASTIC TIRE CO.
1303 Michigan Ave., CHICAGO, ILL. Tel. South 1301
ST. LOUIS, MO.

"GREASJAMMER"



Jams Grease In Any Old Hole
Made Better than You Expect
All Metal Extra Heavy
Large Capacity
SENT PREPAID FOR $1.20
THE MOTOR CAR SUPPLY CO.
1427 MICHIGAN AVENUE, CHICAGO
"EVERYTHING FOR YOU AND YOUR AUTO"

Sta-Rite

DEALERS
Do not buy spark plugs of half a dozen concerns, it isn't necessary.
Condense Your Orders
thus obtaining lower prices, and use "Sta-Rites" exclusively. 46 different sizes and styles. Porcelain and Mica, 75c to $4.00. Secure July, 1905, price list.
The R. E. Hardy Co.
225 W. Broadway, N. Y.

No. 4, ⅝-in. Porcelain, $1.00
P. J. DASEY 431 Wabash Ave., Chicago
No. 34, ½-in. Mica, $1.75

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES
HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

Motor Age
Subscription Price
$2.00 per Year
309 Michigan Avenue :: Chicago

SPROCKETS
Chains and Differentials
CULLMAN WHEEL CO.
1021 HUNNING STREET, CHICAGO, ILL.

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St.
NEW YORK, 69th St. & 8th Ave.
PHILADELPHIA, 220 N. Broad St.
BUFFALO, 649 Main St.
ROCHESTER, 150 South Ave.
BOSTON, 39 Stanhope St.
DENVER, 1449 Clarkson St.
SAN FRANCISCO, 635 Howard St.
CHICAGO, 204 E. Lake St.
ST. LOUIS, 2044 Olive St.
ST. PAUL, 372 Minnesota St.
DETROIT, 265 Jefferson Ave.
PITTSBURG, 5916 Centre Ave.
SAVANNAH, 309 Bull St.
LOS ANGELES, 334 S. Main St.
MINNEAPOLIS, 26 Ave. S. & 5th St.
PASADENA, 33 S. Raymond Ave.
PORTLAND, ORE., 140 Fifth St., N.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

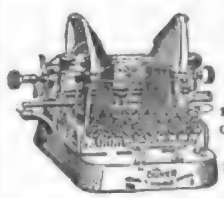
W. H. BROWN

124 W. Jackson Blvd., CHICAGO, ILL.

We Want Agents for the OLIVER Typewriter

—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-900 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

FOR AUTOMOBILE

USED BY THE LARGEST MANUFACTURERS

HARRIS OIL

Sold at all Principal Garages

A. W. HARRIS OIL CO.

330 South Water St., Providence, R. I.
and
66 Fifth Ave., Chicago

LUBRICATION

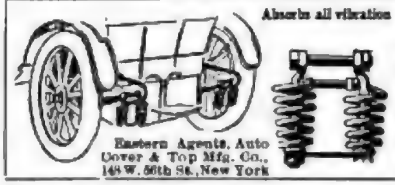
"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.

39 Cortlandt Street New York City



Absorbs all vibration

The Supplementary Spiral Spring

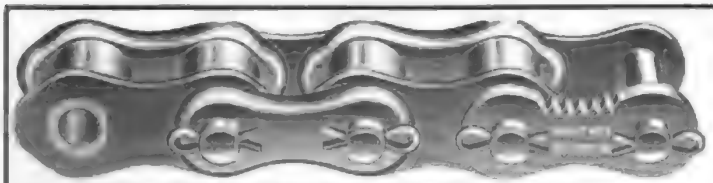
No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

Eastern Agents, Auto Cover & Top Mfg. Co., 146 W. 66th St., New York

SUPPLEMENTARY SPIRAL SPRING CO.

4527 Delmar Ave., St. Louis, Mo.



"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

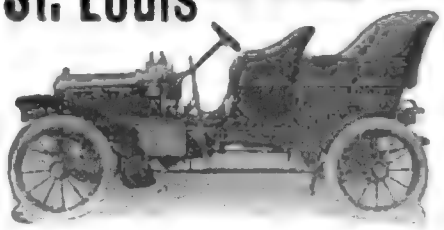
The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

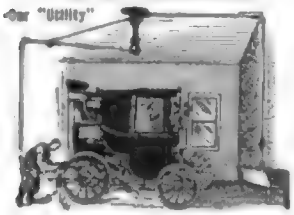
St. Louis 18-22 30-34 Actual H.P.



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.

PROSPECT HEIGHTS PEORIA, ILL.



Our "Utility"

Overhead Washing Machines

A Time, Labor and Money Saver.

For Public and Private Garages. No garage is complete without them.

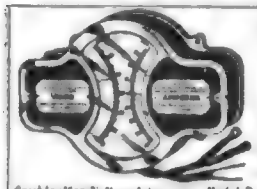
Send for descriptive pamphlet and prices

A NECESSITY TO EVERY AUTOMOBILE OWNER

THE H. NICKOLSBERG MFG. CO., 68 Dey Street, NEW YORK

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO



Combination Volt and Ammeter, Model R

Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works: Waverly Park, NEWARK, N. J.

New York Office, 74 Cortlandt Street

Switchboard Inst't Type K

GRAY & DAVIS HIGH GRADE LAMPS

AMESBURY MASS

A Glance Tells You

That our Universal Joint and Brake Drum is the acme of specialization. Nothing but the best used. Inquiry will prove this.

SPICER UNIVERSAL JOINT MFG. CO.

PLAINFIELD, N. J.

Direct factory representatives: K. Franklin Peterson, 105 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

Garlick Auto Props

CUSHIONED TOPS

8 inch lift

Use the Garlick Auto prop. It is cheap, strong and durable, and lengthens the life of a tire; keeps it right and proper. Better than hanging them on the wall. Will fit any machine, any weight. Send height of axle, from the floor, and price as below and we will send, express prepaid, to any part of U.S. Adjustable

A—$2.00 set of 4 B—$3.50 set of 4

GARLICK AUTO PROP CO.

Madison Ave. and Broadway, Paterson, N. J.

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

Joseph Dixon Crucible Co.

Jersey City, N. J.

MENDENHALL'S ROAD MAPS

"ROADS MAPS" Ohio, 25c; S.W. Ohio, 35c; N. Ohio, 35c; Ind., 25c; N. W. Ind., $1.00; Ill., 25c; Ky., 50c; Mich., 25c; Pa., 50c; Ia., 25c; Mo., 25c; N. Y., 50c; N. J., 50c; Wis., 25c.

C. S. MENDENHALL, Pub., 508 Race St., Cincinnati.

The IGNITION PROBLEM is SOLVED

in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.

No Batteries. No Coil. No Commutator.

Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N.Y.

MOTOR CAR SPECIALTIES and SUNDRIES

WE SELL EVERYTHING

WRITE FOR CATALOG

THE AUTOMOBILE EQUIPMENT CO.

252 Jefferson Ave. Detroit, Mich

For Bolted Down Information About

AUTOMOBILES in general & WELCH CARS in particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.

Factory, Pontiac, Mich.

Atwater Kent Timer

"No Wobble."
"No Adjustments."
"Two Bearings."

"Contacts Run in Oil and Entirely Enclosed." "Durable Electrically and Mechanically." "Copied from None."

Atwater Kent Mfg. Works,

115 North Sixth St, Philadelphia, Pa

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

COMPLETE LISTS

of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

Standard Roller Bearing Co.

STEEL BALLS

BALL BEARINGS

Roller Bearings

Automobile Axles

Send for Catalogue. PHILADELPHIA

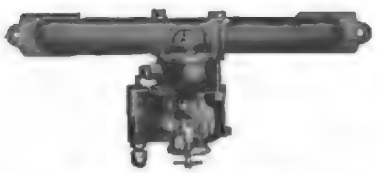
BODIES AND TOPS

C. P. KIMBALL & CO.

[illegible] Michigan Ave. CHICAGO

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00
Two-cylinder Queen	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E Full information sent on request

HOLLEY BROS. CO.

572 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD

AND

FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1297

1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1312 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: 'PHONE SOUTH 1042

1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—Moline 4-cyl. 30 h. p. side entrance, new $1250; Moline, 2-cyl. 12 h. p. side entrance, new, $800; Hoffman 16 h.p. tonneau, new $400; Murray runabout, $200; Oldsmobile, $250; Buckboard, $200; Oale, 8 h. p. new, $850; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller" "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

EVERYTHING IN AUTO SUPPLIES FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO.

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1528 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

REO

SEND IN APPLICATION

RALPH TEMPLE

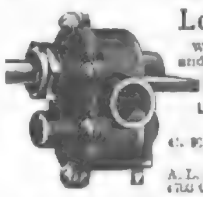
309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO



Lobee Gear Pump

Well adapted for Oldsmobile and other makes. Works with any type of radiator. Easily attached. Write for prices.

LOBEE PUMP CO.,
240 Terrace, Buffalo, N. Y.

C. E. Miller, Agent,
97 Reade St., New York

A. L. Dyke Automobile Supply Co.
4755 Olive St., St. Louis, Mo.

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

ROBERT VOLT-AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS
30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.
58 Shelby St. Detroit, Mich.

POPE
-TOLEDO
-HARTFORD
-TRIBUNE
-WAVERLY

ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1322-26 Michigan Ave. Phone 1099 South
321-25 Fourth St. Phone 2781 Main

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

WITHERBEE

Storage Batteries

are used and endorsed by forty-two of the leading automobile manufacturers.

Specify the WITHERBEE and avoid ignition trouble. Satisfaction guaranteed or purchase money refunded.

Sold by the leading jobbers. Write for descriptive pamphlet.

WITHERBEE IGNITER CO.

841 West 43d St. NEW YORK

Auto Top Bronzes

Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.

C. W. COOPS CO.

3 Appleton St., Boston, Mass.

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY

WARREN, OHIO, U. S. A.

THE U. S. JACK

WITH UNIVERSAL HEAD

LIFTS ANY WEIGHT CAR UP TO 6000 Lbs

A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 51-4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

U. S. JACK CO., 352 S. Clarement Av. Chicago

THE SUPERIORITY OF

AMERICAN COILS

is widely known

WE MAKE ALL STYLES

Neat, Compact, Efficient

Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.

American Coil Co.

FOXBORO, MASS.

No. 11 Dash Coil

Pacific Coast Branch, 306 McAllister St., San Francisco

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

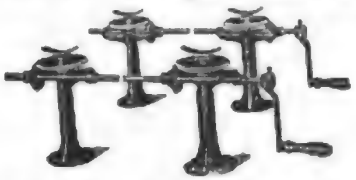
YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 60,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

REST YOUR TIRES with the **"Springfield" Auto Lift**



Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DAY & CO., Pacific Coast Agents, San Francisco

THE SHAWVER CO., Springfield, O.

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.

Peerless Automobile Jacks

Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight 4½ lbs., price $ .50. Express prepaid in the United States. OLIVER MFG. CO., 205 S. Desplaines St., Chicago, Ill.

Buy A

WAYNE

and save all arguments

Simplicity Automobile Extension Cape Tops
Simplicity Spray Hoods

CHARLES P. McCLELLAN, Fall River, Mass.

This is NOT

A FAIRY TALE

We guarantee to increase the spark in your cylinders by

ONE HUNDRED PER CENT

Through our PATENTED

Steel Armored Ignition Cable

Adopted by the Leading European Firms

It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!

HERZ & CO., Civil Engineers 187 Elm St., New York

The largest manufacturers of Ignition Material in America.

No-Mor Auto-Freeze

put in your circulating system keeps the water from freezing all winter.

At dealers' or write to

Owen Chemical Co.

45 Vincent St. Cleveland, Ohio

Does She Miss Explosions?

That's a sign that your batteries are weak. The owner of an Apple Automatic Battery Charger never has trouble from a weak current or batteries. See us at N. Y. and Chicago Auto Shows.

THE Apple Automatic Battery-Charger

The Dayton Electrical Mfg. Company
75 Beaver Bldg. Dayton, Ohio

Diamond Chains

Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.

DIAMOND CHAIN & MFG. CO., Indianapolis

HOT SPRINGS, ARK.

Only 20½ Hours from Chicago

VIA THE

WABASH

You can leave Chicago daily at 11:30 A. M., on the

BANNER BLUE LIMITED

the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.

Write for free Booklet telling all about this popular health and pleasure resort.

Ticket Office, 97 Adams St.

CHICAGO

C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A. Chicago.

MOTOR AGE

GETS THE NEWS

309 Michigan Ave., Chicago

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., Ft Wayne, Ind

NON-FLUID OIL

THE STANDARD AUTOMOBILE LUBRICANT

Versus Fluid Oils? No Drip! No Waste! Versus Greases? No Heating! No Gumming! Don't confuse with "Compounds," "Non-Liquid Oils" and similar imitations. If your dealer cannot supply you, we will send FREE SAMPLE PREPAID.

NEW YORK & NEW JERSEY LUBRICANT CO.
14 CHURCH ST., N. Y. 70 NINTH ST., SAN FRAN.

If You Are a Judge of Good Plugs

so much the better, but if you are not, it really does not matter, for you're only to try a "Never-Miss" to realize that

NEVER-MISS Spark Plugs

are the perfection of ignition. Miss (Plugs) Porcelain. They are the one plug that satisfies. They take and bring you back. The 1906 Never-Miss (patent applied for) is the best. Any size, any car, any where, $1.50 and worth it. Coils, Battery Connections and Chain Tools. Just get acquainted with Never-Miss. The acquaintance will be lasting, our word for it. 1 Doz. Battery Connections free with 3 Plugs. Fully guaranteed. Write today. The longer you wait the more good spark plug enjoyment do you "Miss." See the point?

Never-Miss Spark Plug Co., Lansing, Michigan

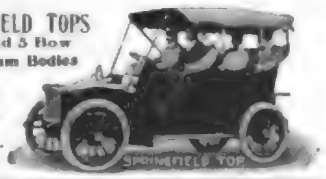
Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

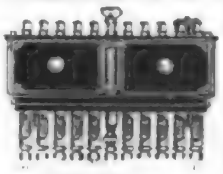
RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

SPRINGFIELD TOPS
3, 4, and 5 Bow
Aluminum Bodies
Springfield Metal Body Co
72 Bowie Ave.
Brightwood
SPRINGFIELD MASS.



A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

A PLEASURE TO HEAR THE GABRIEL HORN

Something New and Sensible for Automobiles, Auto Boats and Launches

Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—single, two or three horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 50th St.

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 302 JACKSON BOULEVARD, CHICAGO

Eclipse Tops

LOOK BETTER
WEAR BETTER
MADE BETTER
ARE BETTER

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

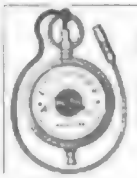
AUTO BRASS & ALUMINUM CO., Flint, Mich.

ORIGINAL MANUFACTURERS OF
AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.



POCKET
Battery Ammeter
0 to 30 Amperes

Indicates in any position and in either direction of current. In testing single cells, the cord is not necessary.

Price $3.50

ELDREDGE ELECTRIC MANUFACTURING CO.
Springfield, Mass.

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX
FAYETTEVILLE, N. Y.

CHICAGO and CINCINNATI

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

MONON--C. H. & D.

Ride this way once and you'll ride again—we think.

Chas. H. Rockwell, Traffic Manager
Frank J. Reed, Gen'l Pass. Agt.
CHICAGO

MOTOR AGE

Gets the News
Get Motor Age
$2.00 a Year

309 MICHIGAN AVE., CHICAGO

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the same time, same tools, same effort, and one twist cleans the entire porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of its holder, and the gaskets of copper drop with it. No digging!

It is nickeled inside and out. *Highly polished* and *dust-proof*. Sparks between two *adjustable* points and not between one point and the *shell*. Its points are *protected*.

Porcelains are *hand turned* and so perfectly glazed that soot cannot *stick* to them. Their threads are cut to perfection, and every particle of the film of cheapness is left out of them.

Postpaid, Anywhere, $2.50. Booklet free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

CANDY CARBIDE

For FRENCH AUTO LAMPS (Impregnation dust & oxide)

Packed only in 10 lb. cans. Price $2 each. Discount to dealers in case lots of 12 cans.

SOLE MANUFACTURERS

ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET NEW YORK

Digitized by Google

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. In the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

WHAT WE HAVE:

The **HERZ TIMER**—16 models, to fit any make of motor: Remember: It's **Toolsteel vs. Toolsteel.**
Bougie Mercedes—double stone.
Herz-Distributor—1 coil for all cylinders.
Guenet Coils. Carpentier-Interrupter.
New prices—Single, $16; double, $20; triple, $30; quad, $50.

A line of switches of original design; contacts dust-proof covered.
Detachable terminals.
Wire terminals with groove.
Special ignition cables and wires.
Everything for the ignition.
One grade: The Best.

HERZ & CO. Civil Engineers
187 Elm Street, New York

Write for free Vademecum of Ignition.

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy** and **satisfaction** in having such work done outside of the city.

W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 871 Wabash Ave.

THE YANKEE SILENT MUFFLER (Pat.)

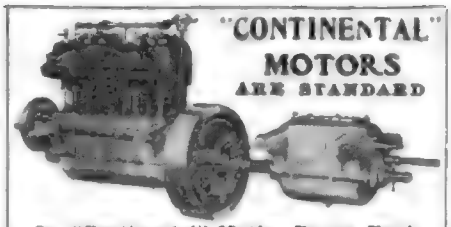
Excels all Mufflers. The discs expand according to the size of the explosions. A vacuum is created between the exhaust valves and the Muffler, which draws the burnt gases from the cylinder, and back pressure is overcome. 10 per cent more power guaranteed. Radiation so great that the Muffler keeps cool; al o engine. Fits all makes of cars. Send for catalogue and price.
D. B. SMITH & CO., Utica, N. Y., U. S. A.

THE SOLVAY PROCESS COMPANY'S
"KAL-KRYSTAL" makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses
CARBONDALE CHEMICAL CO.
739 UNITY BLDG., CHICAGO

MAT'S BODY POLISH
Prevents the Finish from Cracking or Staining
Used by the Chicago Garages. Send for sample.
$2 PER GAL. **MAT. WEIS**
1412 Michigan Avenue, CHICAGO

MOTOR AGE
CONTAINS WEEKLY THE
Best Budget of Automobile News in the World
Subscription $2.00 A Year

STEEL CASTINGS
FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.



"CONTINENTAL" MOTORS ARE STANDARD

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 40 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car
HIGHEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE
AVOID INFERIOR IMITATIONS
ASK FOR CATALOGUE
Continental Motor Mfg. Co. 240-244 W. Lake St. CHICAGO
K. F. PETERSON, Direct Factory Representative

SOMETHING NEW
IN BOTH AIR AND WATER COOLED **MOTORS** WRITE US FOR PARTICULARS
FAST MCH. & TOOL WKS.
28th and Greenfield Aves. MILWAUKEE, WIS.

C. O. T. ACID CURE SOLUTION AND VULCANIZING FLUID.

WHY worry over a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber size of cut. Not loosened by heat. Plain rubber patches both round and oblong.

CHAS. O. TINGLEY & COMPANY
Rahway, N. J.
Beckley-Raiston Co., Chicago, Ill., West. Dis.

Anti-Freezing Calcium Chloride
In cooling water of Automobiles **Won't Rust** or effect the metal. Freezing point 54° below zero. Non-precipitating.
Write For Our Circular
James H. Rhodes & Company,
107 N. Kinzie St., Chicago.

Electric Signs
Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.
U. S. ELECTRIC SIGN CO., Muncie, Ind.

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing
A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.
ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas

MISCELLANEOUS.

Advertisements under this head 2 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE CHEAP—Three 12 H. P., 4-cylinder, air-cooled auto motors, 1905 type. One 3 H. P. marine motor. These are all desirable machines, but we wish to remove them to make room for our 1906 product. Write quick. The Kirkham Motor Mfg. Co., Bath, N. Y.

FOR SALE—12-15 H. P. touring car in good condition; cost $1,400, will sell for $500. Write for particulars to F. R. Morrison, Ashtabula, O.

WANTED TO TRADE—New Simplex piano player for second-hand automobile; 28 pieces with it. Cost $310. What have you to offer. L. C. Larson, Sioux Center, Ia.

FOR SALE—Packard late 1903 Model F; recently overhauled at factory. Will equip with brand new tires and sell for $750 cash. First check takes it. H. W. Beach, Montrose, Pa.

FOR SALE—One 1904 double cylinder Haynes-Apperson touring car with canopy top, 5 lamps, horn and one extra tire; tires and car in first-class condition; good as new; cost $2,500; will sell for $1,000. Frank Anderson, Aurora, Ill.

FOR SALE—1905, 50 H. P. Thomas Flyer, cape top, glass front, Gabriel horn, Hartford shock absorbers, five lights, perfect condition; a bargain; owner purchased 1906 Thomas. Address L. R. Clinton, Binghamton, N. Y.

Very Low Excursion Rates For Christmas Holidays

To all points on the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, with limit returning January 3, 1906. Rate one and a third fare for the round trip. Individual Club Meals, ranging in price from 35c to $1, and Mid-day Luncheon, 50c, served in Nickel Plate dining cars; also service a la carte. No excess fare. Chicago city ticket offices, 111 Adams St. and Auditorium Annex. Depot, La Salle and Van Buren Sts., the only depot in Chicago on the Elevated Loop.

I WANT to sell my 1905 16 h. p. two-cylinder car, complete with canopy top and glass front; run less than 1,800 miles; want higher powered car. Address W. C. B., 147 Lawrence St., Brooklyn, N. Y.

FOR SALE—Packard 4-cylinder, Model L. First class condition. Ready to run for another season without any expense necessary. Cape Cart top. Price low for quick disposal. L. B. J., care MOTOR AGE.

FOR SALE OR TRADE—One 12-passenger car in first-class shape. J. S. Selmears, Winfield, Kan.

FOR SALE—Prosperous retail automobile business handling several licensed standard lines, doing upwards of $50,000 business per year in city of 100,000 people, with only one competitor; requiring about $10,000 cash to purchase. Address W., care MOTOR AGE.

WANTED—Winton, 1904, double cylinder, 20 horsepower. Must be in first-class condition throughout. Give complete details in first letter as to tires, body, condition of engine, distance traveled and lowest spot cash price. W. A. Co., care MOTOR AGE.

FOR SALE—1½ h. p. motor cycle engine, $20. C. Shook, Waterloo, Iowa.

FOR SALE—Three horse engine castings, air or water cooled cylinders; head and cylinder cast in one piece; clutch in fly wheel with drop forged crank shaft; complete set with all forgings and drawings with cylinder bored, $8.50. Cash with order. We guarantee these outfits, and if not satisfactory your money back. Address F. F. Michaels, Marshalltown, Iowa.

METZ MOTOR CYCLE (like new), $100. Autocar, two cylinder, 12 h. p., $600. Ford two cylinder, $300. Olds rear axle and casing complete, $10. Robert Gedye, Greenwich, Conn.

FOR SALE—Premier, Model F, 1905, four cylinders, air cooled, 16 h. p., side entrance, Studebaker top, glass front, side curtains, Presto light gas tank, four new lamps, tools, etc. Almost new. Cost $1,750. Price $1,100 cash. *No trades.* A. B. Clay, 1240, 324 Dearborn St., Chicago. Phone Harrison 2375.

WANTED—White Steamer, 1905 Model. Will accept best proposition offered; cash. Frank Anderson, Aurora, Ill.

Digitized by Google

FOR SALE—1905 Model N Packard, in good condition in every respect, headlights and full equipment; cost $3,800; lowest price, $2,250; have ordered new Packard. C. H. Ordway, 220 Clarendon St., Boston, Mass.

WANTED! ORIENT BUCKBOARD

users to know that we recut main gear and furnish new noiseless pinion to match for $6. We also rebore and fit up cylinders and pistons. McCadden Machine Works, St. Cloud, Minn.

FOR SALE—One 1904 Acme touring car, in first-class condition; 5 lamps, horn, etc.; cost $1,750, will sell at $750; quick sale. Frank Anderson, Aurora, Ill.

HIGH GRADE Marine and Automobile Engines, 2 and 4 cycle, 2 to 30 h. p. Lowest prices. J. Houle Motor Works, S. East St., Holyoke, Mass.

300 GROUT SURREY. Thoroughly overhauled; fine condition. Dr. Frank Graham, Tennessee Trust Bldg., Memphis, Tenn.

FORD BARGAIN—1904, Model C, 10 h. p. Ford auto; detachable tonneau, full lamp equipment, searchlight, Blanchard French horn, two extra tires and all modern appurtenances. Good condition. E. C. Clark, Paducah, Ky.

FOR SALE—Ford Model "F." Bought last July. Complete with top, storm apron, oil and acetyline lamps, Presto light gas tank, horn, heavy car type Fisk tires. Price $700. Address "Ford F.," care MOTOR AGE.

FOR SALE—One 1903 double cylinder Pope-Toledo, in first-class condition; detachable tonneau; 5 lamps, horn, etc.; cost $2,000, will sell at $600. Frank Anderson, Aurora, Ill.

1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; has new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 20 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, 2d best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4 Indiana Ave., Chicago.

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, $75; cost $150. A. M. Symonds, 901 Fairfield Ave., Chicago, Ill.

WANTED—Party to take interest in good paying business; must be able to invest from $1,000 to $2,000; must be capable of doing office work. Address Reas & Co., top floor Pratt Block, Kalamazoo, Mich.

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas headlights, cape top, portfolio, extra tool boxes, complete tool equipment, including some spare parts, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make offer. Box 71, care MOTOR AGE.

Oldsmobile, with top; in good running order. Write for description and make an offer. Address Shaw, 26 Goodrich Ave., Buffalo, N. Y.

FOR SALE—Packard Model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Baltic-cord tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,00 Off taken once. Bates-Odenbret Auto Co., Milwaukee, Wis.

TRADE quarter section smooth land in western Kansas wheat belt for automobile. Martin, Hutchinson, Kan.

5 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror headlights and generator; baskets, auto-electric light for gauges. Address Box 7, Portland, Me.

Logan

1906 Light Delivery Car
That Car of Quality

2 Cylinders Opposed. Air Cooled.
Capacity 1500 lbs. Speed 15 Miles per Hour.

THE DEPOT CARRIAGE AND BAGGAGE COMPANY

Kansas City, Mo., Nov. 6, 1905.

THE LOGAN CONSTRUCTION CO., Chillicothe, Ohio.

GENTLEMEN:—

Regarding the light air cooled delivery wagon, which we received from you some three weeks ago, wish to state it is working splendidly.

It is doing more work than two wagons, and we are running it about 14 hours a day.

The car is simply O. K.

Yours truly,

THE DEPOT CARRIAGE & BAGGAGE CO.

"Logan" MODEL I, WILL DO AS WELL FOR YOU

Write for Catalogue A 121.

The Logan Construction Co., Chillicothe, Ohio

FOR SALE—8 H. P. Olds engine in runabout car. 2 new Morgan & Wright tires. $250. Box 143, Cayuga, Ind.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—Detachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

1906 Olds, Model B; curve dash; blue and yellow; used but little. M., care MOTOR AGE.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

Scrap Auto Tires
We Buy Them
LAUN-CARLSTEN CO., 90 Metropolitan Blk., Chicago

1905 Model B Pope-Hartford; new; never used; $500. N., care MOTOR AGE.

FOR SALE—Cadillac, 1904 Model "A;" tonneau; newly painted; guarantee good condition. Capen Motor Car Co., St. Louis, Mo.

BARGAINS while they last. New 2 H. P. marine engine, $60; new 6 H. P. 2-cylinder marine engine, $165; new 4-cylinder marine engine, only $300; fully guaranteed. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago, Ill.

FOR SALE—Model A Winton; run 500 miles; fully equipped; bargain for quick sale. C. E. Wilkins, Omaha, Neb.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

1903 Winton; completely overhauled; worn parts replaced; new paint; new 4½-inch rear tires; side baskets, etc.; $650. L., care MOTOR AGE.

Christmas Holiday Excursion Rates

Via the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, at a fare and a third for the round trip, with return limit of January 3, 1906. Through train service to New York City, Boston and other eastern points. No excess fare. Individual Club Meals served in Nickel Plate dining cars. Three through trains daily from La Salle and Van Buren St. Station, the only depot in Chicago on the Elevated Loop.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price $1,000. Ralph E. Clarke, Coldwater, Mich.

FOR SALE—1905 Model Royal tourist; new August 1st; run 1,500 miles; owner buying 1906 Model. Address L. B. K., care MOTOR AGE.

FOR SALE—4¼x4 opposed engine castings; complete, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

AUTOMOBILE—Cadillac, B model; good order; cheap. The Globe Chemical Co., Court and Deercreek, Cincinnati, Ohio.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

WE HAVE a brand new Baker Imperial and a Baker Stanhope, slightly used for demonstrating. We are not going to handle electric cars the coming season and will sell these at less than cost. Pardee-Ullmann Company, 1218 Michigan Ave., Chicago.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

1905 Model 6 C curve dash Olds; new paint and tires; just as good as new and looks it; top with it. K., care MOTOR AGE.

FOR SALE—One 40 H. P., 1905, up to date Thomas Flyer. Has had the best of care and is as good as new. Extension top, glass front, 6 fine lamps, including 3 in swivel searchlight. Prestolite tank and Jones speedometer. Speak quick. Barclay Auto Co., 248-50 Third Ave. S., Minneapolis, Minn.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Seven horsepower runabout, in perfect order; cheap. T. E. Lutz, Galion, O.

KINGSTON CARBURETORS

1905 model, 1 inch inlet, absolutely new $4.75 each. Cash with order.

HOLLEY BROS. CO.

661-673 Beaubien St. DETROIT, MICH.

Digitized by Google

See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

THE BILLINGS & SPENCER CO.
HARTFORD, CONN.

Your $5.00 Back

If after 30 days' trial you don't feel absolutely sure the

SKINNER COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

Compact, light and convenient for carrying.

$5 Express Prepaid

SKINNER & SKINNER
Mfrs.
4154 Indiana Avenue
CHICAGO

Reference: Illinois Trust & Savings Bank, Chicago

LEA TIRE PUMP

Works by a crank, with a rotary motion. Easy, quick. Gives even pressure on all the tires. Get our illustrated Book B. Ask also for proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.
New Haven, Conn.

The Old Reliable

Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co.. 85
Adams Company 70
Adland Motor Co..... 83
Allyne Brass Fdy. Co..... 79
American Ball Bearing Co..... 69
American Battery Co..... 78
American Coil Co..... 84
Apperson Bros. 79
Aster Co. 76
Atwater-Kent Mfg. Co..... 82
Auto Brass & Aluminum Co..... 85
Auto Directories Co..... 82
Automobile Club of America..... 86
Automobile Equipment Co..... 82
Automobile Front Drive Mfg. Co. 80
Automobile Supply Co..... 73

Badger Brass Mfg. Co..... 71
Baker Motor Vehicle Co..... 63
Baldwin Chain & Mfg. Co..... 79
Bartholomew Co. 79
Beaver Mfg. Co..... 57
Berkshire Automobile Co..... 71
Billings & Spencer..... 88
Blomstrom, C. H., Motor Co..... 49
Boston Auto Gage Co..... 82
Bowser, S. F., & Co..... 85
Briscoe Mfg. Co..... 77
Brown, S. G., & Co..... 80
Brown, W. H..... 81
Buckeye Mfg. Co..... 61
Byrne-Kingston Co. 59

Cadillac Co. of Illinois..... 83
Cadillac Motor Car Co..... 53
Canedy, Earl 85
Carbondale Chemical Co..... 86
Carr, F. S..... 72
Champion, Albert 82
Chicago & Alton Railway..... 80
Coey, C. A., & Co..... 83
Columbia Lubricant Co. of New York 76
Continental Caoutchouc Co..... 67
Continental Engine Co..... 78
Continental Motor Mfg. Co..... 86
Coops, C. W., & Co..... 84
Corbin Motor Vehicle Corporation. 48
Corwin Mfg. Co..... 68
Cramp, Wm., & Sons Ship & Engine Building Co..... 79
Crawford Automobile Co..... 68
Cullman Wheel Co..... 80

Dayton Electrical Mfg. Co..... 84
Dayton Motor Car Co..... 56
Diamond Chain & Mfg. Co..... 84
Diamond Rubber Co..... 82
Dixon, Joseph, Crucible Co..... 82
Dyke, A. L., Auto Supply Co.... 86

E. H. V. Co..... 58
Eclipse Buggy & Mfg. Co..... 85
Edmunds & Jones Mfg. Co..... 73
Eldredge Electric Mfg. Co..... 85
Electric Storage Battery Co..... 81
Electric Vehicle Co..... 68
Elmore Mfg. Co..... 75
Excelsior Supply Co..... 83

Fairmount Engineering Works.... 83
Fast Machine & Tool Works..... 80
Fisk Rubber Co..... 65
Ford Motor Co..... 40
Franklin, H. H., Mfg. Co..... 37
Frazier, W. S., & Co..... 86

Gabriel Horn & Mfg. Co..... 85
Garford Co. 77
Garlick Auto Prop Co..... 82
Gilbert Mfg. Co..... 88
Githens Bros. Co..... 83
Goodrich, B. F. Co..... 56
Goodyear Tire & Rubber Co..... 61
Gray & Davis..... 82
Gray-Hawley Mfg. Co..... 88

Ham, C. T., Mfg. Co..... 68
Hardy, R. E., Co..... 80
Harris, A. W., Oil Co..... 81
Hartford Rubber Works Co..... 62
Hartford Suspension Co..... 82
Haynes Automobile Co..... 54
Hern & Co..... 84-86
Hine-Watt Mfg. Co..... 76
Hofeller Brass Fdy. Co..... 80
Holley Bros. Co..... 83
Hyatt Roller Bearing Co..... 88

Imperial Brass Mfg. Co..... 79
Imperial Wheel Co..... 55
Importers Co. 83

Jackson Automobile Co..... 57
Jeffery, T. B., & Co.....Cover

Kimball, C. P., Co..... 82
Knox Automobile Co..... 66
Kokomo Rubber Co..... 73

Leather Tire Goods Co..... 85
Lehman Bros. 74
Lester, E. F..... 85
Lexington Hotel 80
Link-Belt Machinery Co.....Cover
Lloyd Iron Roofing & Paint Co.. 77
Lobeo Pump Co..... 83
Locomobile Co. of America..... 36
Logan Construction Co..... 87
Lunkon Auto Supply Co..... 71
Lozier Motor Co..... 48

McClellan, Chas. P..... 84
McCord & Co..... 80
McDuffee Automobile Co..... 83
Madison-Kipp Lubricator Co.... 84
Matheson Motor Car Co..... 72
Maxwell-Briscoe Motor Co..... 53
Mead Motor Co..... 83
Mendenhall, C. S..... 82
Mezger, C. A..... 77
Michelin Tire, American Branch. 63
Miller, Charles E..... 75
Miller Signal Co..... 85
Milwaukee Steel Foundry Co..... 86
Mitchell Motor Car Co..... 38
Moline Automobile Co..... 70
Monon Route 85
Morgan & Wright .....Cover
Mosler, A. R..... 76
Motor Car Equipment Co..... 70
Motor Car Specialty Co..... 88
Motor Car Supply Co..... 90
Motz Clincher Tire Co..... 70
Mutty, L. J., Co..... 85

National Motor Vehicle Co..... 50
National Spring & Wire Co..... 84
Neustadt Auto & Supply Co..... 78
Never-Miss Spark Plug Co..... 85
Newmastic Tire Co..... 80
N. Y. & N. J. Lubricator Co..... 85
Nicholsburg Mfg. Co..... 82
Nordyke & Marmon Co..... 66
Normandie Hotel 75
Northern Mfg. Co..... 65

Oakes & Dow Co..... 74
Olds Motor Works.....42-43
Oliver Mfg. Co..... 84
Oliver Typewriter Co..... 81
Owen Chemical Co..... 84

Pacific Tucking & Mfg. Co..... 69
Packard Electric Co..... 84
Packard Motor Car Co.....Cover
Pantasote Co. 64
Pardee-Ullmann Co. 83
Pedersen, J. T..... 85
Pennsylvania Rubber Co..... 64
Peerless Motor Car Co..... 39
Pierce, Geo. N., Co.....Cover
Pittsburg Reduction Co..... 85
Pope Mfg. Co..... 45
Post & Lester Co..... 53
Prest-O-Lite Co. 74

Railway Appliances Co..... 85
Rainier Co. 52
Rhodes, James H., & Co..... 86
Robert Instrument Co..... 83
Rose Mfg. Co..... 76
Royal Battery Co..... 69
Royal Motor Car Co..... 74
Rubay, Leon 82
Rubber Goods Repair Co..... 83
Rushmore Dynamo Works.....54-55

St. Louis Motor Car Co..... 82
Scoville & Peck Co..... 79
Shawver Co. 84
Skinner & Skinner..... 88
Smith, D. H., & Co..... 86
Spicer Universal Joint & Mfg. Co. 82
Springfield Metal Body Co..... 83
Standard Roller Bearing Co..... 82
Standard Welding Co..... 62
Stanley, John T..... 72
Steel Ball Co..... 69
Stevens, J., Arms & Tool Co..... 41
Stolp Mfg. Co..... 78
Streit, A., Machine Co..... 78
Supplementary Spiral Spring Co.. 81
Synnestvedt Machine Co..... 80
Syracuse Aluminum & Bronze Co. 81

Temple, Ralph 83
Thomas, E. R., Motor Co..... 47
Thompson, Chas. A..... 81
Tingley, Chas. O., & Co..... 86
Trebert Gas Engine Co..... 74

U. S. Electric Sign Co..... 86
U. S. Jack Co..... 84

Veeder Mfg. Co..... 78
Vehicle Equipment Co..... 72
Vesta Accumulator Co..... 76

Wabash R. R..... 84
Waltham Mfg. Co..... 50
Warner Instrument Co..... 71
Way Muffler Co..... 44
Wayne Automobile Co..... 84
Weber, O. F., Co..... 83
Weed Chain Tire Grip Co..... 78
Weis, Mat..... 86
Welch Motor Car Co..... 82
Western Tool Works 66
Weston Electric Instrument Co.. 82
Wheeler & Schebler 51
White Sewing Machine Co..... 67
Whitlock Coil Pipe Co..... 76
Whitney Mfg. Co..... 81
Willard Storage Battery Co..... 78
Willis, E. J., Co..... 84
Winkley Co. 76
Winton Motor Carriage Co..... 35
Witherbee Igniter Co..... 84
Wolverine Automobile & Commercial Vehicle Co..... 70
Worthington Automobile Co..... 69

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

MOTOR AGE

VOL. VIII NO. 24 CHICAGO, DECEMBER 14, 1905 $2.00 Per Year

AUTUMN RAMBLE THROUGH PENNSYLVANIA

NOVEMBER in Pennsylvania is noted for its semi-occasional days when all nature seems to be at peace, when winds are lulled, skies are clear, temperature Junish and the faint haze which o'erspreads hill and valley is often accentuated by the scattered forest fires peculiar to the season. Were it not for the numerous evidences on every hand that the sturdy husbandman has garnered his crops and has everything snug for approaching winter, one might well imagine it an exceptional day in early summer; but the trees are almost entirely stripped of their summer raiment, which, shriveled and brown, has been cast back on the bosom of old Mother Earth, whence it came. Such a day at such a season almost invariably gives one the impression of a calm before a storm—indeed, the next day is likely to be of the typical November variety, with a chilly rain and howling winds to chill all enthusiasm.

It is an ideal season for 1-day trips and it was on such an Indian summer day that a party left home in Philadelphia for a ramble to the north—with no especial objective point and, stowed away in the tonneau, a comfortable-looking and capacious hamper, prepared by the women, which made the oftentimes important question of dinner a negligible quantity. It is a comfort to know that one is not to be hampered by the demands of the inner man—or woman—and the meal schedules of rural Bonfaces, who are prone to adhere too closely to the time-table, regardless of the wants of belated automobilists.

As the travelers swept north on magnificent Broad street, the Quaker city's crack highway—14 miles long and asphalted nearly the entire distance—even the sturdy Rambler seemed to have imbibed some of the enthusiasm inspired by the perfect day, for it bounded ahead at a pace which on more

A DASH DOWN INTO RUSH VALLEY

than one occasion brought forth a warning wave of the hand from the gasping law minions who stood on the shady sidewalks, lazily swinging their clubs and doubtless deploring their haste in changing their underwear.

The foxy Quaker city automobilist, in taking a trip, always considers how he may avoid the omnipresent toll-gate—if not entirely, at least in part. At its northern end Broad street debouches into the old York road, where, in a swift-moving car, the toll-gates seem almost as numerous as the trolley poles which line either side of the splendid highway. Those in the know always side-step as much of this and any other toll road as they can. Therefore a detour via Cayuga street and Wayne avenue to Washington lane was decided on, and in a few minutes the ramblers were in the heart of historic Germantown, with its pre-revolutionary stone mansions and its high hedges. There's something about Germantown that reminds one of rural England. Indeed, a sizable proportion of its present population can trace their ancestry back to the tight little isle. The detour cost the turnpike company two tolls and as the car flashed across the old York road at Ogontz the members of the party mentally thumbed their noses and wiggled their fingers at the unsuspecting toll-taker in the little yellow house in the distance. While on the matter of toll-gates a little tip to the tyro is in order. Invariably on approaching a gate which is situated on a down grade—and many of them are—it is prudent to have something happen to the brakes, and when the toll-gate keeper comes out of his house, with his hand extended in his matter-of-fact way, to be busily engaged in trying to get the car under control. Everybody does it—indeed, one almost imagines that the toll-taker at a down-grade gate expects it, for after a shout and jotting down the license number—if he can get a glimpse of it in the dust and rush—he saunters back to his chair and his paper, confident of getting you on the return trip. But of course a different route is taken for the return trip, and when one travels again in that direction he usually relies on repeating the trick—and usually gets away with it, unless he meets at the gate another vehicle whose bucolic owner is paying toll and swapping neighborhood gossip with the keeper. Of course, on an up grade one usually pays—unless the hill is a short one which can be rushed.

Crossing the old York road at Ogontz, which, by the way, derived its present name from the country seat of Jay Cooke, a financier of note during the rebellion, and which in days agone bore the euphonious title of Shoemakersville, the quakers sped on through the crisp brown leaves, past pretty Rydal and Meadow Brook, with its golf links and handsome hunt club house, till they swung into the old Second street pike at the top of Hallowell's Hill. By the way, there is a certain enjoyment, which one cannot exactly explain, to be derived listening to the zip! zip! zip! the wheels make in crushing down a bunch of dry

Digitized by Google

ALONG THE DELAWARE AND LEHIGH CANAL NEAR ERWINA—A PICTURESQUE BIT OF SCENERY

leaves in the road. Who can explain it? A psychologist could get four or five sticksfuls out of such a pregnant subject as that.

From the top of Hallowell's hill one gets a birdseye view of the Huntingdon valley, one of the most fertile agricultural sections of eastern Pennsylvania. As far as the eye can see are fields of various shades of brown, checker-boarding the prospect, every other one, apparently, dotted with shocks of corn. From such a height the Indian summer haze becomes apparent even to the casual observer. Far off, the foothills of the Blue mountains are clothed with its misty indistinctness almost to the point of obliteration. But while the tourists commented on it they had dropped down to the floor of the valley, over the bridge across Pennypack creek and up the opposite slope past Bethayres station on the Reading's Bound Brook route between Philadelphia and New York. It is a rather stiff climb and a long one, but the Rambler took it on the high speed without a murmur. Passing the ancient Lady Washington inn, the oldest hostelry on the pike and famous for having entertained within its four walls in days agone many men and women famous in state and nation, the top of the grade was reached, where by turning to look over the road it was just possible to distinguish through the haze old Billy Penn on the top of the city hall, just 15 miles away.

The route traveled was a famous stamping ground for cyclists in the last decade of the nineteenth century—sounds a long while ago, doesn't it? and leads to one of the old-fashioned inns where the wheelmen were wont to congregate in the '90s the Sorrel Horse. The road forks immediately in front of this famous caravansary, and there was some discussion as to which should be taken. To the left lies Hatboro, to the right Southampton. The city folk had often been in Hatboro, but once in Southampton—to the right, then. And over the fair to good road they make good time up hill and down dale through Southampton and Cornell, and in a quarter of an hour reach the Richboro and Pineville pike at the first-named place. Northward they went and ere long, after mounting a short but steep grade, the wide expanse of Rush valley burst into view, and as they descended the hill under brakes they saw trouble ahead. A four-horse team was drawing a loaded hay wagon up the long hill, and as the leaders caught sight of the motorists sliding rapidly down upon them they began to act like real circus horses. They stood on their hind legs and waved their front ones in the air. The motorists stopped and the camera man took advantage of the opportunity to snap off the scene. The driver jumped from his seat and shouting to the people in the car to stay where they were, he unhitched the two leaders and took them to the rear of his load, where he tied them securely. Returning to the two wheelers he stood at their heads and shouted, "Come on!" Releasing the brakes the car slid slowly and noiselessly past and as it swung around the turn beyond the travelers looked back and saw him putting his team in shape for the long pull to the crest.

This Richboro and Pineville pike is such an up-and-down affair that the Philadelphians had great bad luck at the toll-gates, their brakes getting out of order with such persistency as to save two dimes in the coin of the realm. Who says there is not a silver lining to every cloud? Half-way to Pineville the old covered bridge over the Neshaming came into view.

At Pineville the pike veers to the westward in order to avoid Buckingham mountain, which is quite the highest ground in

BEAUTIFUL PHILLIPS' MILLS, WITH ART SCHOOL AMONG TREES AT RIGHT

Digitized by Google

ENTERING NEW HOPE OVER THE SMOOTH DOYLESTOWN AND NEW HOPE PIKE

ucks county, and, the mountain having een left to the rear, the party crossed La-aska creek, and climbed up to Centreville, Buckingham, where the Pineville pike de-ouches into the Doylestown and New Hope ke. Here another council of war was held d the route question discussed in all its earings. Finally some one mentioned din-r—it was then 11:30—and the camera man ttled the matter by averring that he knew e best place in Bucks county to spread the nch for the party.

"To the right then," he said, and once ore the car was under way and headed to-ard the Delaware, 8 miles away, passing Centreville one of the numerous inns here General Washington slept overnight d the hostelry was over 25 years old when happened!

Through Greenville, or Holicong, the road winds through a country which fairly teems with reminders of the redskins' presence there over 100 years ago. Almost every hill, creek and village has an Indian name in addition to its English one, and in the majority of instances the former is the more sweet-sounding. Beyond Holicong the ramblers again, after a downward rush through the sweet-smelling country, crossed Lahaska creek, which follows the road around the base of Buckingham mountain—or perhaps it was the road that did the following. Lahaska, a pretty little village, lies just beyond. Its name, which of course is of Indian origin, is variously rendered in the old records—Lehoskuk, Lehaskee and Laskuk—and means big mountain—referring, of course, to Buckingham mountain, the highest ground in this section for miles around.

Beyond Lahaska the road begins to drop gradually, and the city people had not progressed far before the camera fiend, pointing to the left, said: "There's the place!" And under his direction the Rambler was guided under the trees as near as possible to one of the biggest springs it has ever been the writer's fortune to see. Aquetong spring—also called Ingham's spring—is 15 feet deep and provides a sufficient volume of water to feed a lake covering 17 acres. It's cool, limpid water doubtless quenched the thirst of the red man 100 years ago as it does that of the automobilist nowadays. It is often mentioned in the old records, and many an Indian campfire has doubtless been reflected from its cool depths. A peculiar feature of Aquetong spring is that it has a subterranean connection with a spring at Deer park, several miles away across the hills. It is a common practice to drop a chip, with one's name written on it, in Deer park spring, and in 3 days or thereabouts it can be found floating in Aquetong spring.

It was at this picturesque and historic spot that the party discussed its cold ham, chicken and other solids and liquids which the automobilist feminine knows so well how to prepare. And all hands were willing to admit that when he proposed the lunching-place the camerist knew what he was talking about.

In a very few minutes after the sightseers started they came to Aquetong lake, which is formed by the overflow from Aquetong spring. Then came the Doylestown and New Hope pike, and almost before they knew it they had surmounted the last rise separating them from the Delaware and the autumn beauties of the famous valley lay spread out at their feet. Below in the foreground lay New Hope, which is famed in history as the place where Washington's ragged army crossed the Delaware on its way from its winter quarters at Valley Forge, in pursuit of the British army under Lord Howe, which had just evacuated

SHOWING ROCKS 1-2 MILE LONG AND 300 FEET HIGH AT NARROWSVILLE

Digitized by Google

LAKE COVERING 17 ACRES, FED BY COOL, LIMPID WATER FROM AQUETONG SPRING

Philadelphia and was retreating toward the Hudson. It was called Coryell's ferry in those old revolutionary days, and Lambertville, on the Jersey side, wasn't even thought of then. A grist mill on the Pennsylvania side was later named Hope Mills, and when it burned down and a new and larger one was built the owner named it New Hope Mills, the little town which gathered around the mill and the tavern being eventually named New Hope. .

From the top of the long grade back of New Hope a charming view of the Delaware valley for 20 miles in either direction is had and the travelers bowled down the grade and through the quaint town without a halt, turning left into the river road alongside the Delaware and Lehigh canal, which parallels the river for miles. The road hugs the canal like a brother, crossing to the river side from time to time as the rocky promontories intrude too closely upon the bank and returning when the cliffs retreat.

Following the river road Phillips' mill, which once performed the usual function of grinding the neighboring farmers' grain into flour and meal, was soon reached. Several years ago it and the accompanying dwelling were acquired by an artist who spent a wad of money and transformed the place into an art school, where students may study art and enjoy an outing at one and the same time. It is quite a popular resort in summer, and nature furnishes opportunities galore here for the students to study her charms.

Just above Phillips' mill the road passes through Centre Bridge, and still farther west—for the river just here runs almost due east and west—the party astonished the Lumbervillers by spinning through their quaint little canal town at a 20-mile clip. Soon they arrived at Point Pleasant, where the Delaware resumes its general north-and-south direction. At this place the romantic Tohichon empties into the Delaware, and the scene presented by the charming little village as the farthest end of the covered bridge was reached on this warm and still November afternoon—its comfortable homes straggling along the Pennsylvania shore against the high spruce and laurel-clad hills of almost perpindicular rock—will hold a place in the memories of the tourists.

So they contented themselves with enjoying the scenery on the fly, zip-zipping through the dry leaves as they passed under the still partly-clad trees, and crossing and recrossing the canal as the cliffs encroach on the road and force it to the farther side. The camera man reminded his friends just here that on such a day the river road is preferable to the hot and hilly pike, 4 miles to the west and running almost parallel with the river.

About 8 miles from Point Pleasant is Uhlertown. Here it is possible to cross the Delaware to Frenchtown, N. J., and get somewhat better roads up to Milford, but the ramblers decided to stick to the river road on account of the scenic beauties the Pennsylvania side afforded, not to mention the fact that in this weather the road is rated from fair to good. Uhlertown should really be called Moyertown—a man named Moyer bought the whole town outright a few years ago for $15,000—but Uhlertown it has been for half a century, and the natives in these country towns are a little set in their ways, and Uhlertown it remains. These little bits of history in passing are handed out gratuitously by the camera fiend who, it appears, had bicycled through this territory some years ago.

Just above Uhlertown the Delaware describes about 150 degrees of a circle, forcing its way through some foothills that very nearly approach the mountain stage. At Lodi, Bridgeton and Upper Black's eddy—Point Pleasant, about 13 miles back, was at one time called Lower Black's eddy—the cliffs close to the left become more prominent and seemingly closer to the road the farther they advance, shutting off the sunlight. At Narrowville—a straggling village in which it is possible only in certain places to squeeze a house between the road and the cliff—the rocky heights so encroach on the road that in places it is just about wide enough for one vehicle to comfortably amble along. This bit of road through the narrows costs the county and township authorities quite a pretty penny every year. After a heavy rainstorm the road is always badly washed—not alone in the usual way, but also from veritable cataracts from the cliffs above. It appears that the natural drainage is not sufficient to carry off the surface water into the gullies and gorges here and there in the cliffs, and as the slope is riverward, in many places the water drains directly over the edge of the cliff onto the road, from 250 to 300 feet below. It may well be imagined that in wet weather this road is impassable and that deep holes are worn in the many places where the oftentimes formidable, if temporary, cataracts have done business.

Beyond Narrowville the prospect opens out somewhat, and once more the tourists were out in the sunlight. The driver had been looking at his watch and taking a squint at the sun every now and then; but the camera man, who has packed up his kit for the day—having run out of plates—called his attention to the fact that "there's to be a three-quarter moon tonight, and there's no need of worrying about getting home before dark." He had hardly uttered the words when the right front tire went flat with a spiteful hiss. An ordinary wire-nail of commerce, bent almost v-shape, had punctured both shoe and inner tube. That nail cost many, many minutes before the party reached home. It was indeed fortunate that there was a moon and that the night was clear.

At Kintnersville they left the Delaware to swing once more into its north-and-south course and headed for home by way of the pike. After such a long stretch of level road as the route along the river gave them they rather welcomed the ups-and-downs afforded by the pike between Easton and Philadelphia. Indeed, it almost seemed as if there were no levels—they were going either up or down hill constantly—a pleasant sensation and one that was enjoyed.

A turn to the right here would have headed the travelers toward Easton, the

AQUETONG SPRING, 15 FEET DEEP

Digitized by Google

Water Gap and the Poconos. That would have meant a trip of 2 or more days. With the conditions ideal, it was with regret that the turn to the left was made and the home run finished. But the intention is to do the gap and the Poconos some day. The Monroe and Pike county roads are famous, not alone as well-made and well-kept highways, but as affording the lover of beautiful scenery unlimited opportunities of enjoyment. That entire region is the summer playground of tens of thousands of Philadelphians, and even in winter the all-year class of the hundreds of resorts are fairly well patronized.

It is an almost constant climb until they reached Ferndale, where they took the left fork to Revere and then followed a good dirt road to Ottsville—a country dotted at frequent intervals with pre-revolutionary farm houses and inns, one of the latter, the Harrow, having, of course, been honored by an overnight stay of the father of his country. It is indeed a modern hostelry in this section of the country which has not put up the immortal George for at least 1 night. It would appear that G. W. spent a great deal of his time going about the country doing 1-night stunts at the various caravansaries within 100 miles of Philadelphia in all directions. There are so many of them that he could not possibly have stayed more than 1 night in each and attend to his presidential duties at the capital. What a boon an 18-horsepower automobile like ours would have been to George in those days! All our ancient highways would now be dotted with roadside pumps labeled: "Here G. W. stopped and filled his radiator," with roadside stores bearing the legend: "G. W. bought 1 gallon of gasoline here on June 16, 1779," etc. Besides, with an automobile George could have seen to it that not one of the inn-keeping gentry was overlooked—not only near Philadelphia, but along the entire coast from Portland to Jacksonville.

That wire nail had cost so much time that the shades of night were falling fast as through Tohickon park they passed. The park is laid out on the banks of the same picturesque Tohickon, which they passed early in the afternoon at Point Pleasant,

Bridge Across the Neshaming at Rush Valley

where it empties into the Delaware. They hurried on to Pipersville, 35 miles from home, where the driver decided to make a lasting job of the tire. This would take some time and as the culinary ability of the cook there had been piped off to the camera man some time before, and all hands had full-fledged automobile appetites, it was decided to give the Pipersville boniface an opportunity to make good. That he didn't was the consensus of opinion after the travelers had all been tucked in and were bowling down the pike Philadelphiaward under the mellow beams of three-parts-full Luna. It was almost ideal.

A word on the meal problem. It's getting to be a serious thing—this taking the say-so of somebody who heard somebody else tell Jones that he heard Smith say that the Bungtown hotel puts up good fodder. It ought to be more definite. The national governing body of automobilists should make it its business to inquire into the merits of and select official hostelries in various sections of the country. Some bucolic innkeepers are prone to clap on a 50 or 75 per cent increase on automobilists on the theory that anyone wealthy enough to travel in a motor vehicle has money to burn.

What with the headlights and the rays of the moon there was nothing to prevent the driver from burning up the road with as much confidence as if it had been mid-day. And he did. There were no coppers to fear—just yet, for the motorists were still in Bucks county—and they fairly flew up hill and down dale, through Plumsteadville, Danboro and Dyerstown, slowing up as they reached Doylestown—doing 11 miles in about 25 minutes. Then swinging into the Doylestown pike they kept on without a stop—keeping a good lookout meanwhile at bridges for the trolley cars, which ran at the side of the road. These bridges are in almost every instance several feet narrower than the road, and as the trolley tracks cover fully half the space on all of them, careful work is necessary on the part of automobilists, especially at night.

At Bridge Point they cross the Big Neshaming, an Indian name meaning "two streams making one," and 4 miles farther along pass over the Little Neshaming gleaming in the moonlight like a silver ribbon. Then follows quaint and quiet Horsham, with its quaker meeting house gleaming among the trees back from the road, and in a few minutes more they slid down the hill into Willow Grove, which at this time of the year gives little evidence of the fact that in the summer season it is one of the most popular suburban pleasure resorts in the country.

No better idea of the power of money, judiciously expended, to change a landscape, can be had anywhere in this country than at Willow Grove. Ten years ago it was lonely farm land, but blessed with a good location. The Philadelphia Rapid Transit Co. saw the possibilities, spent $100,000 in transforming the corn and grain-fields into a pleasure park, where the world's famous bands and orchestras may be heard during the summer months, and now nearly 10,000,000 fares are collected during each season by the transportation companies in getting crowds to and from Willow Grove.

Now they were on the old York road—with its toll-gates and its ambushes—and careful driving was necessary. The route is well lighted now all the way into town, not alone by fair Luna, but by hundreds of electric lights as well. So on they went through Abington, coasting down the long hill to Noble, then up again to Jenkintown, and down and up, down and up again, past Ogontz, where they crossed the present road on the outward journey in the morning, Milestown and Branchtown, under the Reading bridge at Logan and then out into Broad street, where the asphalt seemed unusually smooth after more than a 100-mile journey over all sorts of roads. One of the joys of making this trip at such a time is that one imagines he is getting the best of Jack Frost and encroaching on old winter's preserves. But it is an ideal tour and one that can be enjoyed in fall weather.

A Picturesque Picnic Spot

Digitized by Google

MOTOR AGE
309 Michigan Avenue
CHICAGO
Published every Thursday by the Trade Press Co. N.H. Van Sicklen, Manager. Telephone Harrison 4410
Subscription two dollars per year. Foreign subscription four dollars. The Western News Co. of Chicago and its branches supply newsdealers. Entered at the Chicago postoffice as second class matter.
New York Office 29 West 42nd Street, London Office, American Publication Bureau 58 Manor Park Road, Harlesden N.W. Member National Association of Automobile Manufacturers, Chicago Trade Press Association and Official Organ of the American Motor League.

THE CRY FOR MORE AND ITS RESULT

MORE power, more speed, more seating accommodations, more length in the wheel base, more flexibility of motor control, more brake efficiency, more positive lubrication, more cooling surface in the radiators and the dozen other mores for which owners of automobiles have been crying this year are being served for the coming season by most of the big motor car builders. The maker who does not include such in the sum total of his 1906 machine will find his stands at the coming exhibitions somewhat deserted, whereas his competitors' spaces will be the magnets of the show. The craving for excellence and supremacy in the mind of man is so dominant that in his selection of a motor car only the best and the one coming closest to his conception of a perfect machine will suffice. The automobile builder is wise in giving what is desired, providing those wants are in harmony with accepted engineering principles.

But why more power and more speed when rural municipalities are insisting on lower speed limits and city authorities are urging the police to enforce speed regulations, to say nothing of their contemplating new and more binding ordinances? Why guarantee every machine to travel 60 miles an hour on average roads when the law says 20 is enough? Why increase cylinder capacity in order to make racing monsters out of the pleasure cars?

The answer to all is—satisfaction. With most owners it is not what they want the machine to do during ordinary travels, but what it can do when an emergency arises and power—perchance speed, too—is needed. The athlete does not require the maximum muscular development for football practice, but the maximum is frequently not sufficient when the final match with a dangerous competitor comes. The ordinary horse can trot along with the fastest track king on the park drives, but is hopelessly vanquished in the race.

So the pleasure automobile, although not designed to make records on the beach, must have ample power for the steepest hill, the muddiest road and the deepest sand. The strength of a chain is measured by its weakest link and the value of the motor car, not by what it can do on the boulevard, but what it can do on the poor country road, on the muddy hill, or through continuous miles of sand. It is for the fulfillment of these requirements that the owner has raised his ceaseless cry of "more," which he will continue to utter until a machine is produced that can truthfully be termed a perfect machine in the worst weather and on the worst roads.

The cry has not been raised in order to turn the highways into race tracks—though some may use them for such purposes—but to secure a machine capable of successfully negotiating any road encountered, in the east, the west, the north or the south, without injury to itself when traveling under full load.

The majority of the cries for more have been heeded. Tonneau capacity is now placed at five instead of three; instead of additional hinged seats, permanent revolving or lift seats with comfortable back supports are provided. Not the least interesting point in this connection is that the latter do not interfere with the entrance or in any manner crowd the passengers. This increased seating has resulted in a car in which the owner, his friends and the chauffeur can travel in comfort.

Greater wheel base has been served scantily by many builders for next year. The present average of from 100 to 108 inches has proved sufficient for general use on American roads. This length seems sufficient to give easy riding over ordinary surfaces at high speed, at the same time giving liberal access to the rear seat. The longer wheel bases, ranging between 110 and 120 inches, are used extensively abroad, but it must be remembered that the billiard table roads of France and England are more suited to such measurements than the ordinary American turnpike. Excessive wheel bases besides calling for greater skill in car control require additional weight, each pound of which adds its quota in tire expense and fuel supply, as well as a general strain on the machine.

Brake efficiency cannot be overestimated. Readers of MOTOR AGE are familiar with incidents occurring resulting in serious accidents where emergency brakes have failed to work. It is in guarding against such repetitions and making the car capable of traveling the hilliest parts of the land that this increase has been made, and few points of improvement are more welcomed. If automobile drivers will accustom themselves to more frequent use of the emergency brakes the loss of presence of mind, when cool judgment is demanded will be less frequent and accidents oftener avoided.

Tire diameters are slightly on the increase, particularly those fitted to medium powered machines, whereas with the biggest touring machines this year's measurements, in most cases, remain in spite of the additional power and weight included. There is a reason for this. Tire makers are improving the quality of materials and the methods of manufacture, thereby making the 4 or 5-inch tire for 1906 capable of withstanding greater service than the 1905 tires of similar diameter.

All in all, the cry for more on the part of the owner is justified and it is complimentary to American builders that the cry has been heeded. May the things that are added not be abused; they will be needed, and then and only then will their full value be appreciated.

MR. MUNSEY'S OBSERVATIONS IN EUROPE

FRANK A. MUNSEY, the magazine publisher, visited Europe and studied the effects the motor car is producing on the continent. He found that France, where the roads are like boulevards, attracts tourists from all over the continent and from America.

He found the way to see Europe is by means of the automobile, not alone because of the good roads, but from the point of independence, convenience, speed, and other advantages which the motor car offers. He found also that many Americans of wealth go to Europe and purchase cars there, rather than ship American cars abroad. He found that Americans spend fortunes each year in automobiling—for cars, for supplies, for hotel accommodations, and for other necessities, to say nothing of luxuries.

Mr. Munsey knows what American roads are—he has told in his magazine what they are—and, knowing the American roads, he has taken the trouble to ascertain what the effect would be were America to have roads such as Napoleon built in France. He found that hundreds of Americans who now pass several months each year in France touring, and who have bought motor cars of foreign make, would stay at home and buy American cars and tour America if America had good roads.

He found that the vast sums of money that go to the makers of automobiles, to the railroads, to the hotelkeepers, to the servants, to the shopkeepers, to the cabmen and to sundry other people in France, amounting in the aggregate to millions, would stay in America and be of benefit to Americans.

All of which illustrates the necessity for the railroads, the hotelkeepers, the resort people, the newspapers and the motor car manufacturers of this country banding together to help along a good cause—good for the pocketbook, good for the reputation of the country, good for the farmer, good for prosperity and good for American citizenship.

Mr. Munsey is not interested in the sale of automobiles, but he is far-seeing enough to realize that it will pay to keep Americans at home and to turn the money now sent to Europe each year into the building of a road system in our own country and in the purchase of automobiles made in America and by Americans.

Digitized by Google

It might be suggested to some people that it is the bit goose that flutters.

If the Florida meet is not a success it will not be because of a lack of cars, if press agents' words can be relied upon.

That man Pennington reminds one of the sun in winter—he gets around in the automobile game once in a while.

There has been so much talk about 1906 cars that when January 1 comes look out the new year is not called 1907.

Nobody ever seriously supposed the French meant what they said about giving up running the Bennett or Vanderbilt road races. The whole story was too much of a joke to be true.

While some makers are apparently dropping prices, others are boosting them; while some claim to never have made a cent, others are declaring dividends. Now the public can figure it out any way it likes and with almost any degree of satisfaction.

Iowa is coming to the front for good roads. The Fayette County Agricultural Society has decided to offer prizes for the best kept ½-mile stretches of roads in the county during 1906. The agricultural societies are setting an example even for the automobilists. It is 2 to 1 that the Fayette county farmers are not motorphobists.

T W

Independents' tire company, the Ajax Standard Rubber Co., already organized, the plant to be at foot of East One Hundred and Sixth street, New York; Horace de Lisser, organizer.

Annual French show opens, President Loubet making tour of inspection; Italy makes impression with its exhibit; Germany unevenly represented.

Congressman Morrell, of Pennsylvania, introduces bill into house of representatives which seeks to compel tourists to take out federal licenses.

Vandals strew nails on course on last day of French runabout test, making it impossible to immediately pick winner.

Pyrenees cup is stolen from de Dietrich exhibit on last day of Olympia show, no trace of it to be had.

Maxwell-Briscoe company announces location of its western factory at Grand Crossing, a Chicago suburb.

Case of New York Automobile Co. against H. H. Franklin Mfg. Co decided in favor of latter.

Official returns give week's attendance at recent Olympia show at 129,372, more than spring exhibition had.

Automobile Club of France decides to adopt suggestion of Marquis de Dion for a European tour.

T. C. Whitcomb comes into fold and successful show at Cleveland is assured.

Percy Megargel covers worst part of the Great American desert.

Nowadays in the automobile business father and all the other members of the family are working.

The loss of the Pyrenees cup by theft was too much even for somebody to suggest that it was taken for advertising effects.

While announcement has been made of the route for the Glidden tour for 1906 nobody has heard much of a howl about any Chicago-St. Paul tour.

The fellow who has just made a machine to travel on land, water or ice, overlooked a bet by not making it capable of doing a little act among the clouds.

If the motorist buys one each of all the new things he sees at the forthcoming shows he will have to secure two or three extra automobiles to carry around the goods.

Even if Congressman Morrell's bill to provide for federal control of automobiles is defeated there will be some consolation in the fact that the government has taken notice of the motor car, which it never has heretofore.

Is it to be supposed that the success of the licensed or the independent show in New York depends upon which secures the patronage of the four hundred? The four hundred did not save the Salon des Importateurs, however.

RISE, YE MOTORING HOSTS, AND FIGHT

AT LAST the federal government is to take up the automobile in the matter of regulations, Congressman Morrell, of Pennsylvania having introduced a bill providing that the interstate commerce commission be empowered to examine drivers of automobiles and issue licenses to those who wish to travel in different states.

The worst part of the bill, outside of the fact that it is rank class legislation, is that each operator of an automobile must pay a fee of $50 for each 3 years, the term for which a license is proposed to be issued if he tours any.

If there is anything that will effectually kill off touring, and consequently the work for good roads, it will be the passage of such a bill. If the automobile associations, the clubs, and motorists in general permit this bill to become a law by being passed by the house and senate and to be signed by the president, they alone will be the sufferers and will have nobody to blame but themselves.

This, too, is something over which the manufacturers and the manufacturers' associations can well afford to assert themselves—it must not be passed!

A year or so ago Congressman Grosvenor, of Ohio, sought to have all classes of motorboats from the dinky little 15-footer gasoline craft to the sea-going ship brought under federal inspection and license. It was a dangerous thing for the motor boat men and the motor boat makers. Not a single motor boat maker shirked his duty; he went out to kill this proposed legislation and killed it. One did not wait for the other—each got busy and constituted himself a committee to take up the matter with owners and through them with congressmen all over the country. Thousands of petitions were sent to members of congress and boat makers appeared before the committee to which the bill was referred to give the committee the information the makers knew it did not possess. The result was the bill never got past the committee.

Work to kill off this new bill should be started immediately, else inactivity will be taken to indicate that it is not objectionable to the automobile fraternity and its passage may become a fact.

Outside the fact that it is rank class legislation, that the license fee is excessive and probably illegal, there is some probability such a license is in violation of state rights. It is illegal and unjust for the federal and state governments to exact license fees from nobody but the automobilists.

If this bill passes and it is held each state has the right to regulate its own automobile affairs, each and every state may exact from each automobilist who dares to enter a state a license fee, so that if an automobilist desires to tour through every state in the union he will have to have forty-four state licenses when the two new states are admitted and the federal tag as well.

Forty five tags on a car!

Pay a license fee of from $75 to $200 a year!!

This whole matter may be taken as a joke, but it is too serious on which to take chances.

Digitized by Google

WANTS A TOURING TAX

Representative Morrell Introduces Bill Into House Proposing Radical Legislation

Washington, D. C., Dec. 9—Automobile tourists throughout the country will be subjected to all sorts of inconveniences if a bill to regulate the operation of automobiles and other motor vehicles between the states, introduced in congress this week by Representative Morrell, of Pennsylvania, is enacted into law. The bill, which was referred to the house committee on interstate and foreign commerce for action, provides that on and after January 1, 1907, it shall be unlawful for any person owning or operating an automobile, whether the motive power of the same be electricity, steam, gasoline, or other source of energy, to operate the same for business or pleasure along the public highways of any state, territory, or dependency of the United States, or of the District of Columbia, so as to pass from one state into another state, territory, etc., without first undergoing a special technical examination as to his ability and power to manage, control and direct automobiles with precision and safety, and obtaining a license or permit to operate automobiles between the states from the regular constituted authorities of the United States, as set out in the following section:

"That the interstate commerce commission of the United States shall have power to conduct the examination prescribed in this act, under such rules and regulations as may be required, and shall appoint a technical expert to test the personal fitness, practical ability and mechanical knowledge of any applicant, owner, or operator of any automobile or other motor vehicle as aforesaid, at such times and places as it may determine. Said technical expert shall be certified by the civil service commission of the United States to the interstate commerce commission, and shall receive a salary of $1,200 per annum and $4 per diem for expenses while absent from Washington in the necessary discharge of his duties."

The bill then goes on to prescribe that every owner or operator of any automobile passing a satisfactory examination before the technical expert shall be licensed by the interstate commerce commission to operate automobiles between the states and territories, District of Columbia and the states, or vice versa. Such license will be good for 3 years from the date of its issue and may not be renewed without examination. Every automobilist passing the required examination shall, before receiving his license or permit, pay into the treasury of the United States the sum of $50. Whenever it appears that any automobilist licensed under the proposed law has been convicted on several occasions in any federal, state, or municipal court of violating the proposed law, or any state or municipal law governing automobiles, the interstate commerce commission shall, after proper notification, cancel and revoke the license of said automobilist and shall not reissue the same. Any automobilist violating the provisions of the proposed law will be subject to a fine of not less than $500 nor more than $1,000, to be recovered in any district court of the United States in the district where the violation occurred. The proposed law is to take effect from and after its passage.

Thousands of automobilists throughout the country will undoubtedly rise and fight this obnoxious legislation to the last ditch. The enactment of the Morrell bill would not only cause tourists to have to pay $50 into the government's strong box, but they would be subjected to many annoyances at the hands of the technical expert, whose rule would be supreme. Representative Morrell is going to have a pretty hard time getting his bill enacted into law, particularly as many members of congress are enthusiastic automobilists. It is class legislation of the rankest kind, Washingtonians think.

Following the lead of Representative Morrell, it is reported that State Senator Clagett will introduce a bill during the coming session of the Maryland legislature to levy a tax of $50 on all automobiles used in Prince George county, Maryland. It is said Senator Clagett has been prompted to take this step because of the numerous complaints made by farmers in the county that their horses have been scared by passing automobilists. Washington automobilists view with alarm this new agitation to put a tax on them, as the runs to Hyattsville, Bladensburg, and other points in Prince George county are popular with them. If the Clagett bill is introduced in the legislature it will be bitterly fought, not only by the automobilists of Washington and Maryland, but by the hotel and business men of the county, who think such a measure would be a step in the direction of retarding progress.

QUAKER DATES NAMED

Philadelphia, Pa., Dec. 11.—At the annual meeting of the Philadelphia Automobile Trade Association, at the Hotel Hanover, the following officers were elected to serve during the next year: President, A. E. Maltby, Winton; vice-president, Gilbert S. Smith, Motor Shop; secretary and treasurer, I. J. Morse, Locomobile. The board of directors will consist of the foregoing officials and W. F. Smith, Rambler, and Daniel Cohen, Reo. Besides the annual election the main business of the meeting was the selection of the date for the annual show, which will be held in the south pavilion of the national export exposition, in West Philadelphia, February 24 to March 3. The managership of the show was accepted by Chester I. Campbell, of Boston.

MAXWELL CHICAGO PLANT

New York, Dec. 12—The Maxwell-Briscoe Motor Co., of Tarrytown, has made its announcement regarding its Chicago plant. The company states it has secured a building which will give 60,000 square feet of floor space. It runs from Seventy-third to Seventy-fourth streets at Grand Crossing. The new plant will have a capacity of 1,500 machines. The method of the Maxwell-Briscoe company will be to ship the parts from its eastern factories at Tarrytown and Pawtucket and have them assembled for the western trade at Chicago. The move was made on account of the heavy railroad rates.

VANDALS SPOIL A TEST

Nails Sprinkled Along Route of French Runabout Trials Delay Naming Winner

Paris, Dec. 1—Contestants who took part in the runabout test organized by L'Auto will have to wait several days before they find out who won the event. On the final day's run vandals scattered tacks and bent nails over the course and so many punctures resulted that the test was stopped at Mantes with many of the machines on flat tires. The officials then decided to appeal to the Automobile Club of France and are now awaiting the decision of the committee which has taken the matter in charge.

When the Automobile Club of France has been consulted the final awards will be made. If the final day's part run is not ruled out of the contest victory will rest with Barriaux, in a Vulpes, who finished first in spite of five punctures. If the final day is ruled out, Gachet and his Lacoste-Battmann, leading the seven contestants at the end of the fifth day, will be the winner of the event.

The 5 days finished without any reversals in form except one—that of Renonce in his Gregoire, whose tires punctured on the morning of the semi-final day of the run and gave him so much trouble throughout the day that he reached the goal with 350 points penalization against him. The handicap was too great for him to overcome, although he had completed 4 days without a black mark against him.

On the final day's run nine contestants started, but owing to the road being sprinkled with nails every tire was punctured and several of the machines dragged into Mantes hours late, with all the tires flat.

The 770 miles of the course were practically covered in remarkable time by the little machines when the horsepower, weather and other details are taken into consideration. Seldom is a car equal to 6 days' consecutive traveling over muddy and snow-covered roads, 75 miles each day, without a break or serious mishap. The cars were put into an enclosure each evening after the run and only absolutely necessary repairs were allowed to be made by the drivers. No cleaning of engines or other work tending to make the next day's run easier was permitted.

Awaiting the decision of the A. C. F. the standing in the test is as follows:

Final day counted: 1, Barriaux, Vulpes; 2, Lionel de Dion, de Dion; 3, Cormier, de Dion; 4, Gachet, Lacoste-Battmann; 5, Bardin, de Dion; 6, Taveneaux, Grégoire; 7, Rochay, Lacoste-Battmann; 8, Thomas, Lacoste-Battmann; 9, Renoncé, Grégoire.

Final day not counted: 1, Gachet, Lacoste-Battmann; 2, Cormier, de Dion; 3, Barriaux, Vulpes; 4, Lionel de Dion, de Dion; 5, Bardin, de Dion; 6, Thomas, Lacoste-Battmann; 7, Taveneaux, Grégoire; 8, Rochay, Lacoste-Battmann; 9, Renoncé, Grégoire.

On Monday last the speed trials were held at Chanteloup. These consisted of a 1 kilometer flying start on the level, a kilometer flying start uphill, and a standing, starting,

Digitized by Google

and stopping test of 500 meters. In the flying kilometer L. de Dion made the best time, being clocked in 1 minute 40 seconds. In the flying start, uphill, kilometer, it was Barriaux, in a Vulpes, who carried off the honors in 4 minutes 5⅘ seconds. Gachet, in a Lacoste and Battmann, starred in the 500 meters standing start and stop, doing the stunt in 57⅘ seconds. In the final summing up, each competitor being penalized one point for every ⅛ second over the best time in each trial, L. de Dion was first, with 86 points' penalization. Gachet was second, with 127; Barriaux third with 176, Cormier fourth with 209, Bardin fifth with 366, Thomas sixth with 437, Rochay seventh with 488, Tavenaux eighth with 844, and Renonce ninth with 1,307.

The Automobile Club of France has decided to adopt the suggestion of the Marquis de Dion which was first noted at the close of the last Bennett race. This was to substitute for racing events a grand continental tour which would form a great reliability contest. The provisional conditions which have been issued, state that the course will be of something over 3,100 miles, mapped out to include portions of France, Belgium, Germany, Austria and Italy. The halting places will be made, more or less, the scenes of public exhibitions of the competing cars and a general sort of international fraternization. The jury to decide the awards at the finish is to be made up of an international selection of judges nominated by the competing clubs. Each stage is to consist of from 186 to 248 miles per day. There are to be four classes of competitors, each of which will be judged distinctly and separately. These classes are distinguished by weight of body, seating capacity and total diameter of cylinders. The lowest class is intended to comprise vehicles capable of maintaining an 18-mile per hour average speed, and the total piston area of the engine must not be greater than 86.59 square centimeters—which in the case of a single-cylinder car would be equivalent to a bore of 7.4 inches. This car must have a two-seated body, weighing not less than 1,651 pounds.

The second class is supposed to be able to maintain an average speed of 22 miles per hour, and the piston area is limited to 226.19 square centimeters, which might represent a two-cylinder car of 4⅘-inch bore; a double phaeton body must be fitted here weighing not less than 440 pounds. The third class is supposed to run at a speed of 25 miles per hour. The piston surface is limited to 346.36 square centimeters, or equal to a four-cylinder engine with a bore of 4⅕ inches. The body weight, three seats being insisted upon, must weigh not less than 825 pounds. The fourth and highest class of all, is supposed to be able to maintain an average speed of 28 miles per hour, piston area in this case to be limited to 430.92 square centimeters, or equal to a four-cylinder engine of about 5½-inch bore. A six-seated limousine is insisted upon, the total weight of which must be not less than 1,116 pounds.

It is said at present that the automobile clubs of Germany, Italy and Austria are favorably disposed, and will take part in this grand tour of Europe.

BIG GATE AT OLYMPIA

Figures Show That 129,372 People Attended Recent English Show —Pyrenees Cup Stolen

London, Nov. 30—Aftermath of the recent Olympia show demonstrates that in point of attendance at any rate the late exhibition exceeded any previous affair of its kind ever held in England, the official figures on the attendance claiming 129,372 for the 6 days, a mark which far exceeds the Chicago show of last winter, when 103,000 people were said to have passed through the gates. Chicago, too, had 7 days—one more than Olympia, but zero weather offset this advantage. This 129,372 also exceeds the gate at the show held in Olympia hall last February, when 125,272 people were checked in. As was the case at the last affair, the attendance on Wednesday was the largest, being 25,404 as compared with 23,112 of the first show. Following is a table showing the attendance at this and the previous show:

	Second 1905 show	First 1905 show
Monday	18,532	16,846
Tuesday	20,578	20,216
Wednesday	25,404	23,112
Thursday	18,240	20,734
Friday	21,568	21,484
Saturday	25,000	22,880
Totals	129,372	125,272

Statisticians, too, have been at work on the value census of all cars, chassis, etc., at Olympia and the figures of H. Hewitt Griffin indicate that the last show total was beaten only by a narrow margin. The average car value was just a shade over $3,000 and nine countries exhibited, the British-made goods representing 55.177 per cent as compared with 44.823 per cent of all the others combined. England, of course, ranks first with cars valued at $756,985. France was next with $403,510. Germany was third with $114,175, Scotland fourth with $76,750, Belgium was fifth with $47,250, America sixth with $41,825, Italy seventh with $41,720, Switzerland eighth with $24,500 and Holland ninth and last with $6,300. As compared with the previous show, the late exhibition only had $16,9150 more.

The Pyrenees cup, the trophy won by M. Sorel in France's big tour last August and valued at $5,000, was stolen the last day of the Olympia show and so far no trace of the massive silver affair has been discovered. It is feared the thieves have melted it up, which will make it necessary for the de Dietrich company to replace it, as it was a challenge cup which was exhibited at the de Dietrich stand by Charles Jarrott & Letts, who have offered $250 for information leading to its recovery. The trophy represented an allegorical figure seated in a car, with the right hand resting on the steering wheel. It measured 2½ feet in length and was about 2 feet high. The robbery is thought to have occurred early in the morning. A night watchman who had been engaged especially to guard the cup absented himself a few minutes and when he returned the cup was gone. The theory is that the trophy was smuggled out of the building in sacks carrying the litter swept up by the cleaners. As the trophy was so big that one man would have all he wanted to do to carry it, the mystery is only intensified. It was thought possible that the cup might be smuggled across the channel, so all the boats were watched, but the thieves were clever enough to stay in London until the hue and cry died down.

AIMS OF CREDIT ASSOCIATION

New York, Dec. 9—Secretary Franz Neilson, of the recently organized Automobile Trade Credit Association, formed for coöperative collection, protection and detection, with some sixty representative firms on its books, has sent out to members and prospective members a brief outline of what the association has done. He announces the election of seven directors as follows: F. J. Alvin, manager American Electrical Novelty & Mfg. Co., New York; L. C. Burnet, Truffault-Hartford Suspension Co., New York; E. J. Willis, president E. J. Willis & Co., New York; George W. Nock, individual dealer, Philadelphia; James E. Murray, manager New York Sporting Goods Co., New York; L. L. Hale, Sibley & Pitman, New York; Carl Kaufman, treasurer Motor Car Equipment Co., New York; Harry B. Mirick, treasurer National Electric Supply Co., Washington, D. C. Immediately following the general meetings the board of directors convened and elected F. J. Alvin president of the association, L. C. Burnet treasurer and Franz Neilson secretary and counsel. The election of four vice-presidents was temporarily deferred.

"Briefly outlined," says Secretary Neilson, "the by-laws provide that the association shall aid in the collection of accounts, collect and disseminate information concerning the standing of customers, protect against unjust and unlawful claims and exactions, settle differences between its members and between members and customers and promote a more cordial feeling between those engaged in the trade."

SHOW PEACE AT CLEVELAND

Cleveland, O., Dec. 11—All chances of any interference with the proposed local show of the Cleveland Automobile Dealers' Association by T. C. Whitcomb, the independent dealer who held an option on Central armory and who threatened to hold a show of his own, have entirely disappeared. The dealers and Mr. Whitcomb have patched up differences and he has joined the association and will help boom the show. This not only brings in his large line, but those of several other dealers who have been outside the ranks of the association and who have been holding off to see what Whitcomb would do. With peace in the ranks, the dealers are now working to make this the biggest local show ever held and the prospects of carrying out this plan look most encouraging. The ground floor space at the Central armory is much larger than at the old Gray's armory where previous shows have been held, and in addition it is the intention to utilize the balcony which has never been possible at Gray's armory. Material and supply dealers will have the balcony spaces, while the ground floor will be devoted to automobiles.

Digitized by Google

IS NOW IN THE DESERT

Percy Megargel Tackles Herculean Task of Crossing Great American Wastes in Motor Car

Needles, Cal., Dec. 13—Special telegram—The Reo Mountaineer has now crossed the worst part of the desert and is headed for home. We ran out of gasoline at Peach Springs, and before a supply could be secured a loss of 24 hours had been occasioned.—PERCY F. MEGARGEL.

San Bernardino, Cal., Dec. 6—After a week of the most careful inquiry, during which time I have been in almost constant consultation with ranchmen, railroaders and automobilists, I have decided to tackle the Great American desert, or such portions of it as lay alongside the tracks of the Santa Fe railroad, with an occasional cut off. It is a comparatively easy matter to follow a route that someone else has laid out and swear at the party who laid it out if things are not as easy as pictured, but it is quite another matter to lay out your own route over a country never traveled by automobile.

Pretty nearly everyone with whom I talk say it is out of the question to attempt to drive a motor car across the Great American desert, as even wagons and horses find it impassable. We may be obliged to turn back and await spring before we cross the Sierra Nevadas in northern California, but I have great hopes of the Reo Mountaineer again doing the supposed impossible and carry Fassett and myself across the desert sands, so long the terror of automobilists.

In addition to my sand tires I have added two very heavy pieces of canvas, each measuring 15 by 7 feet. I have added a new and longer cable to my windlass equipment, have lightened my load by sending even my wearing apparel by express, but have clung to our sleeping blankets and have added a good 2 weeks' provisions to our grub box. Two days without food in crossing the Cascades in Oregon left an impresison that will not be forgotten in a hurry.

My schedule as arranged at present calls for: Needles, Cal., December 9; Flagstaff, Ariz., December 14; Gallup, N. M., December 17; Trinidad, Colo., December 24; Tribune, Kan., December 26; Kansas City, Mo., December 30; St. Louis, Mo., January 3; Indianapolis, Ind., January 4; Columbus, O., January 5; Wheeling, W. Va., January 6; Pittsburg, Pa., January 7; Philadelphia, January 10, and New York, January 11. This would be almost record-breaking time and the chances are that the Reo Mountaineer will be several weeks behind the schedule, especially if deep snow is encountered in the high mountain passes, as must be expected at this time of the year.

This California weather is all that it is said to be. Last Sunday afternoon I went in the Pacific for a swim at Huntington beach, a few miles out of town. The water, while somewhat cool, was delicious and my swimming was not particularly disturbed by the presence of several seals which shared the ocean with the bathers at Huntington beach. The little animals were almost tame and were not the least frightened by the presence of the surf bathers.

There are few eastern manufacturers who realize the automobile situation at Los Angeles. Here it is in the midst of winter, yet every road is in perfect condition and the motorists of this region motor 12 months in the year. Some enthusiasts do this in the east, but here the weather is like June all the year around. If manufacturers fully understood the conditions prevailing out here they would send their first 1906 models this way instead of to the eastern cities, for half the population of Los Angeles are eastern moneyed people here for the winter, and the car they like best here will undoubtedly be the car they purchase in the east.

While there are several automobile publications published in the west—one at Denver, another at San Francisco and another at Los Angeles—the circulation of MOTOR AGE appears to be general and book stores that keep only one or two automobile papers invariably include MOTOR AGE. The majority of automobilists whom I have met on the coast are perfectly familiar with every move the Reo Mountaineer has made since leaving New York last August, thanks to MOTOR AGE, while not a few followed out my adventures in the Pathfinder, as recorded last summer by Mr. Harrison, of our party. The Reo agencies especially appreciate this and frequently I find pasted up on the windows or walls of the local agency pages from MOTOR AGE, picturing out our trip across the continent.—PERCY F. MEGARGEL.

ENGINEERS' SCHOOL OPENED

New York, Dec. 12—The New York school of automobile engineers began its sessions for the season yesterday with day and night classes. There were fifty-four students on the books at the beginning of the year. The school is located at 146 West Fifty-sixth street. In addition to the regular engineers' class, day and night sections, an owners' class opened today. The night students will have 3 hours of instruction, and their session will last 15 weeks, while the day students, having 8 hours' a day, will complete the required course in 8 weeks. Only 6 weeks, however, will be spent in the class rooms, for it is proposed to devote the fifth week to practical work with the car. Professor C. E. Lucke, of Columbia university, the director of the school, has outlined the method of instruction under ten general heads. They are: Classroom instruction by lectures and recitation; instruction on emergency repairs in a shop; transmission of power changes and tire repairs; ignition systems, including all jump and touch sparks; testing of fuel oils and lamp materials; work on engines and power generators; instruction on a complete machine set on rollers so that operaters may be taught to control the machine easily; instruction in taking apart a complete machine and putting it together; track work with a car where all steering and control problems will be encountered; road instruction, both by day and night. Great enthusiasm is being displayed in motoring circles over this school, which has attracted a particularly bright looking lot of students.

CALL IT A GOLD MINE

English Promoters Point Out Money-Making Possibilities of London Cab Service

London, Dec. 2—Two more public motor vehicle prospectuses are out this morning representing in all an appeal for nearly $1,000,000. In one, the proposal is to place twenty cabs on the streets of oLndon, fitted with four-cylinder 20-horsepower engines, with an epicyclic type of speed gear and landaulet body. The only inducement offered to the public to subscribe to this undertaking is an estimate of the profits. It is shown that each cab may be expected to produce $50 per week net earnings. Against this depreciation is set down at 20 percent. The manufacturers of the cabs have agreed to maintain them in proper running order and condition for an inclusive charge of $500 per cab per annum; the tire contractors—who appear to be the well-known Continental Tire Co. of Hanover—have similarly agreed for a period of 5 years to keep the tires in full repair for $225 per annum. Gasoline, lubrication, etc., are set down at $285, drivers and cleaners $465, and insurance against loss of profits through temporary disablement of car, $145 per cab per annum. These last three items therefore are the only fluctuating charges and amount to $179 per cab. This would show a net profit of $895 per cab per annum, and of course it is only necessary to perform the usual multiplication of cabs to secure boundless wealth. The names of the directors do not include anybody connected with the motor business, but it is said that the money is practically underwritten, and that the Ford Motor Co. is the particular firm which has secured the contract for these vehicles.

The other is a somewhat similar appeal, but the engines in this instance are to be fitted to the Unic car, which is practically a Georges-Richard chassis sold in this country under the title of the Unic. The estimate of the running of 100 cabs for a year is put down at $185 per cab, tires at $250 per cab, insurance at $60 per cab, maintenance at $250 per cab; depreciation is put down at about 17 per cent and other charges would total up to $150 per cab, which would mean an estimated outlay of $1135 per vehicle, against which it is expected that the cabs will each earn $2625 per year with a cost in driver's wages of $655. The usual mathematical calculation will again result in dividends sufficient to allure the most exacting.

FRANKLIN WINS CASE

Syracuse, N. Y., Dec. 11—Supreme Court Justice William S. Andrews Saturday decided the suit in the New York Automobile Co., which was brought against the H. H. Franklin Mfg. Co., of this city, in favor of the Franklin company. The New York Automobile Co., which was composed of A. R. Peck, E. I. White and other Syracuse capitalists, brought an action against the Franklin company to recover $100,000, alleging that the latter concern had hired its engineer and stolen the models of a four-cylinder air-cooled motor which they

Digitized by Google

had paid their engineer, John Wilkinson, to develop. Justice Scripture, before whom the suit was originally brought, granted an injunction prohibiting the Franklin company from paying any dividends until the suit was decided. The title of the action was the New York Automobile Co. against Herbert H. Franklin, Alexander T. Brown, John Wilkinson and the H. H. Franklin Mfg. Co. Justice Andrews, in a carefully prepared opinion, goes into the matter from the start. The plaintiffs asked that the defendants be enjoined from making and selling an automobile and from using any of the designs and inventions of John Wilkinson. On this Judge Andrews said:

"No such relief as asked in this action can be granted. Mr. Wilkinson as an employe of the plaintiff had, under the circumstances, a right to leave its service when he did. Concededly he had no right to take with him any of its tangible property such as the model, the patterns, the drawings; and he did not. Possibly he had no right to use any designs which he might remember; and this he did not do. But he, as well as everyone else, had a right to plan and use a four-cylinder air-cooling engine. His experience, his skill, his unmatured thoughts and designs were his own. That they had been gained at the expense of the plaintiff certainly gave the latter no legal right to them. If it had possessed any unpublished inventions which Mr. Wilkinson was not using, another question would arise. But it had not. All it possessed on June 30 was an unperfected model of an engine and this it still has."

EXHIBIT OF AIR SHIPS

New York, Dec. 12—The announcement by the Automobile Club of America that the Sixty-ninth Regiment armory will have an exhibition of balloons and flying machines has caused some excitement. Opinions vary as to the advisability of the club's branching out in the line of aerial navigation. In some quarters the news evokes only ridicule, while others are inclined to believe that the move is a good one. The exhibit is to be arranged under the direction of the recently formed Aero Club of America, which is practically an offshoot of the Automobile Club of America. The entire gymnasium of the armory, with a floor area of nearly 5,000 square feet, is to be devoted to aeronautic vessels. There will be balloons, aeroplanes, box kites and other forms of air ships, including the models of the most famous air vessels of Europe and America. Models of ships driven by Santos-Dumont, Roy Knabenshue and other successful aeronauts already are assured. Various types of motors suitable for air travel also will be exhibited.

MAY RIVAL VANDERBILT

New York, Dec. 12—Indications are that the 200-mile Cuban road race will be a rival to the Vanderbilt affair, for such drivers as Albert Clement, Walter White, Walter Christie, Sisz, Jenatzy, Fletcher, and Earp are expected to compete, to say nothing of other foreign and American speed merchants. Senator Morgan has about completed his plans for the Cuban invasion, the appropriation of $5,000 by the Havana council settling all doubts of the race.

LARGEST SHOW OF ALL

Paris Salon Opens and President Loubet Inspects Leading Makes—Some Features

New York, Dec. 13—Special telegram—Mail accounts of the opening of the French automobile show last Friday in the Grand Palais, Paris, are just at hand and only bear out the expectations of those who have been fortunate enough to have attended previous affairs in the French metropolis—that it is the greatest exhibition of automobiles and accessories ever promoted—a mart where maker, designer and owner meet on an equal footing to see the very latest in automobile fashions.

The exhibition was opened in the usual manner by President Loubet, who makes it a custom to travel the circuit of the show each year and see for himself just what progress his countrymen have made in the manufacture of automobiles.

This time the president of France was hauled to the show in a horse-drawn vehicle and he made a bee-line for the Richard-Brasier stand, where Brasier and Thery were holding court. The president handed out a few lines of jolly to the two motoring celebrities, inspected the car that won the Bennett cup, then resumed his tour, stopping at the Delahaye, Renault, Gobron, Panhard, Bollee, Fiat and Darracq booths. This done the president astonished everyone by expressing a desire to inspect the Mercedes. This took him into German territory and he chinned away with M. Charley until that individual was grinning with as much glee as he would have shown if he had been given half a dozen crosses of the Legion of Honor. From the show proper President Loubet went through the motor boat section in the Serree de la Ville.

As for the show itself, the reports say that one was impressed by the similarity of design in all the leading makes, the Mercedes type being so popular that it was a task indeed to distinguish the make of a car unless one could get a front view and tell by the radiator. Italy was a most important factor in the show, the enterprise shown by its manufacturers, the many mechanical features of its cars and especially the success of the Fiat and Itala in the road races of the past summer forcing France to shove over and allow its rival room on the throne. This was in marked contrast to Germany, which was unevenly represented. Of course the Mercedes was the cynosure of all eyes, but the other makes from the fatherland, being comparatively unknown, were not much in evidence.

Italy's ideas—some of them—have evidently been grabbed by its rivals. The large-sized radiators and capacious pumps first prominent on cars of Italian manufacture, were noticed on other makes. All makers have evidently given the subject of lubrication considerable thought and study, for on all sides were seen the force-feed system with a positive mechanical drive. Among the recent converts to this way of thinking are the Mercedes people, who now employ a mechanical pump for the distribution of oil. Their pressure system is now only used to force the oil from the tank on the side of the chassis into the reservoirs on the dash. Another thing noticeable is the absence of the belt-driven pump on the leading makes.

On the new models of the Mors, Brasier, Renault and others it is noticed that automatic starting devices are used. The prize offered by Henry Deutshe for the most practical method of starting the engine from the driver's seat has evidently stirred up the inventors to the profit of the maker. President Loubet was particularly impressed with this improvement.

Automobiles were not the whole thing at the show, the display of motor boats, air ships and commercial trucks being particularly large and impressing.

TIRE COMPANY NOW FORMED

New York, Dec. 13—Special telegram—MOTOR AGE is now able and at liberty to add further and more definite particulars as to its story last week of the outline of the move of the A. M. C. M. A. to secure exclusively to its members a supply of tires outside of the pool, form a company, in which its members should have a chance to become stockholders and so practically secure rebates on the present tire price, which is to be maintained.

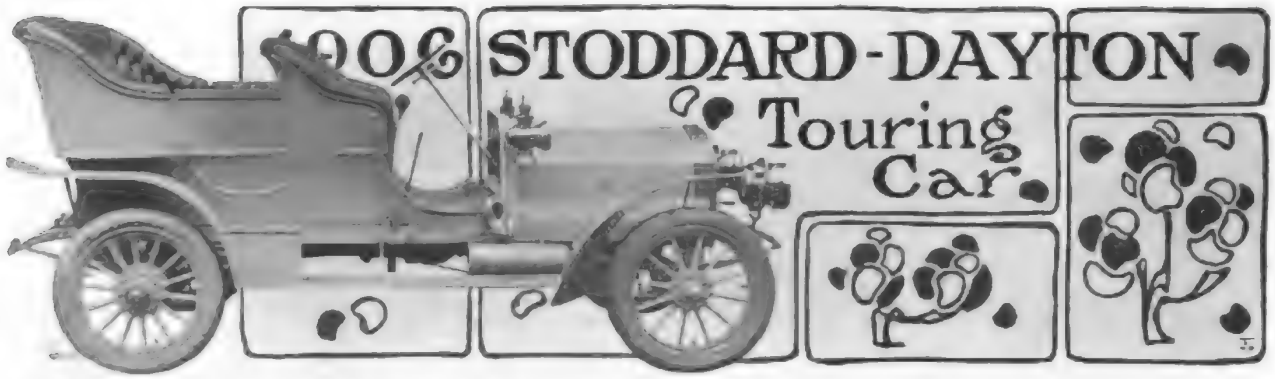
The company in question, the Ajax Standard Rubber Co., has already been formed with a capital stock of $100,000. Horace de Lisser, former sales manager of the International Automobile & Vehicle Tire Co., is the organizer and has ample financial backing outside of any stock that may be subscribed by members of the A. C. M. C. M. A., according to the plan outlined in last week's MOTOR AGE. A big factory has been leased at the foot of East One Hundred and Sixth street, New York, machinery is being installed and it is expected that deliveries of the finished product will begin on January 1. Already the crude rubber is being worked at a rubber plant. The making of the tires will be under the direction of the former superintendent of the International company, who knows the formula and is well acquainted with the process.

Roger B. McMullen, general manager of the A. M. C. M. A.; James Couzens, of the Ford Motor Co.; Benjamin Briscoe, of the Maxwell-Briscoe Motor Co., and A. C. Newby, of the National Motor Vehicle Co., have been actively associated with Mr. de Lisser in the promotion of this important independent project.

COLONEL POPE WORKING

New York, Dec. 11—Colonel Albert A. Pope's pet scheme for a New York-Chicago highway, has come to the surface again. The New York and Chicago Road Association has sent out an appeal to the public to assist in urging the completion of the national highway. The route leads from New York city up the east side of the Hudson to Rhinebeck, thence through Ulster, Delaware, Broome, Chenango, Tioga, Chemung, Allegany, Cattaraugus and Chautauqua counties to Erie, Pa., thence it follows the lake shore to Toledo, and on to Chicago. About 160 miles of the road in New York is completed; some stretches are already improved and work has been started on other portions. It is expected that this appeal sent out by the association will do a world of good, for there is great enthusiasm shown in the states along the route.

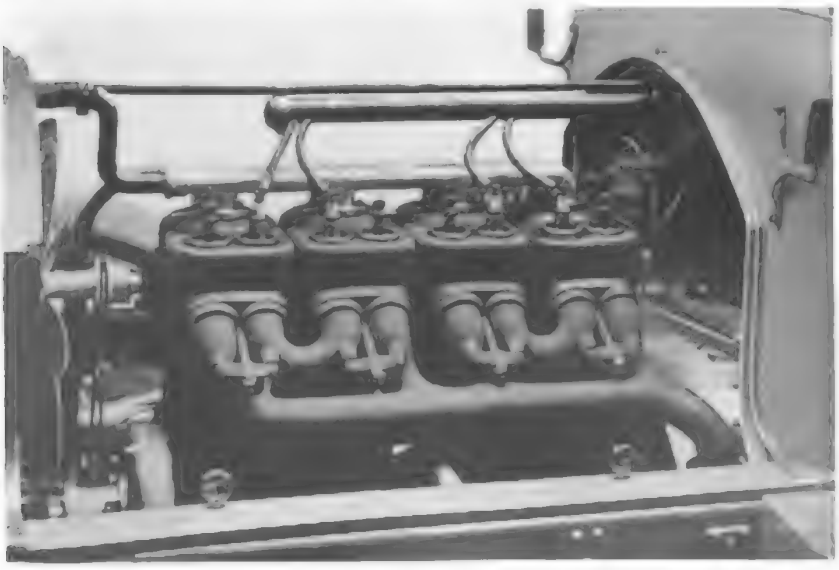
Digitized by Google



TWO four-cylinder cars, a runabout and a five-passenger touring car, comprise next year's line of the Dayton Motor Car Co., of Dayton, O. The former, not yet announced by its maker, will possess as features cylinders with 3½-inch bore and stroke, three speed and reverse selective type of sliding gear, and shaft final drive. In the touring car, which will naturally take the place of this year's machine, many notable changes are introduced. The present motor with 25 horsepower, the cylinders of which have 4 by 4-inch measurement, has been replaced by one with 4½ by 5-inch cylinders, rated at 30 to 35 horsepower, and this year's common type of sliding gear set is replaced by one of the selective type, giving the same number of speeds, but with changes effected through a side lever instead of from the steering pillar. Timken roller bearings are used in the road wheels, transmission set, propeller shaft and rear axle, the latter being of the floating type. The general increase in size has occasioned a wheel base 7 inches longer than formerly, being now 103 inches; 32-inch wheels are still used, but the tire diameter has been increased to 4 inches; the weight of the machine is approximately 2,100 pounds.

Channel steel constitutes the entire main frame and subframe. The former has its side pieces parallel throughout, carries long curved Mercedes spring hangers at the rear and the usual short forged hangers in front. The subframe is made up of a pair of channel pieces slightly lower than the main pieces and carried on cross pieces in front and rear, with intermediate side braces. Gusset plates are used throughout. A spring suspension of four long semi-elliptics remains. This year the rear springs are 50 inches long and 2 inches wide and the front 40 inches in length. The former are swung outside of the frame members and at their front ends are not shackled but carried on the ends of a sleeve on a cross rod of the frame. At the back they are shackled to a rod extending across the frame through both spring hangers. As at present the front axle is of I-section with Elliott type of steering knuckles integral with it and the spring seating in the form of clips surrounding the axle and the springs clipped thereto. Case-hardened steel bushing are used in the steering knuckles.

A Rutenber motor is used, and aside from the increase in the bore and stroke few changes are noted. One is a new design for the inlet and exhaust pipes from the valves, the former now being inside the latter, permitting the Schebler carbureter being carried closer to the crankcase, as well as having the hot exhaust piping further removed from the cylinders. In connecting each set with the valve openings gaskets are eliminated. The valve opening is slightly coned, as is that of the pipe, and between the two is placed a short bronze sleeve with the ends coned to fit into the valve and pipe openings. When the latter are closed together the bronze sleeve is entirely concealed between them. The pipe is held to the cylinders by yokes and bolts. Other features are the placing of the pump, shown at the left in front, slightly closer to the radiator and carrying it in a separate casing readily detachable from the motor; the carrying of the high-tension wires to the spark plugs within a tubing supported by a rod from the top of the dash to the radiator top and the conducting of a separate oil lead to the commutator casing, still carried on the top of a vertical shaft at the rear of the cylinders. A six-feed oiler is now carried on the right side of the motor and has two leads to the end crankshaft bearings and others to the crankcase. The pump is driven from the commutator shaft by an eccentric and rocker arm. Six individual pumps are used, each pump in circuit with a separate lead and adjustable so that any flow of lubricant can be had in each lead. On each piston is a wide oil groove near the bottom for distributing oil over the cylinder walls, and over the connecting rod bearings are oil cups for collecting the splash. The wrist pins are made hollow and pinned to the piston journals and in lubricating oil flows through them to the center, where oil holes connect with the bronze bushings. Babbitt on a bronze ground is used in all of the crankshaft bearings, but plain bronze is adopted in the camshaft bearings.



INLET AND EXHAUST SIDE 1906 STODDARD-DAYTON MOTOR

It is in the transmission of power from the motor that the real innovations in the car are encountered. The clutch remains much as it is and is of the external cone type with the flywheel B carried on an integral flange on the crankshaft and the latter with a continuation A forming a bearing for the male portion C of the clutch. This part is bolted to the clutch hub D1 bearing directly on the crankshaft continuation, serving only as a bearing, and to the hollow portion D, through which it is connected to the driveshaft M in the gear box. In retaining the clutch spring E in position the usual end-thrust ball bearings are placed behind a ring against the back end of the spring and in retaining the ring in place a hollow screw F with curved flange resting against the spring ring is used. This screw F enters the end of the crankshaft and

Digitized by Google

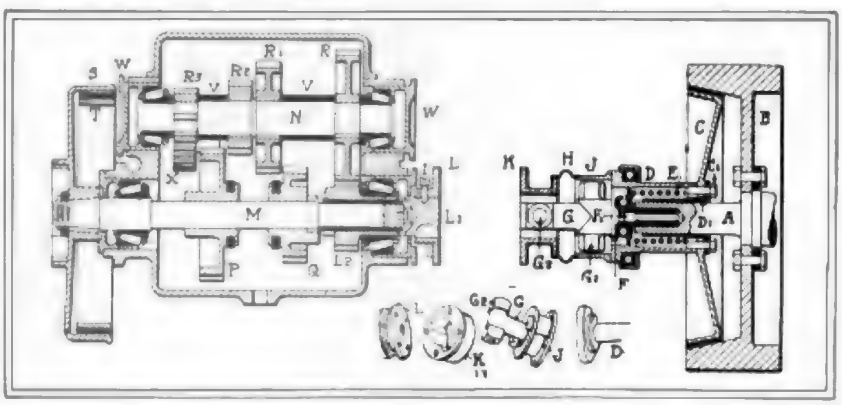
within it is a small screw F1 that also enters it and the crankshaft, thereby serving as a lock nut. The universal joint coupling the clutch with the gear box is novel because the clutch can be removed without dismounting the gear box or the motor. Three main parts comprise the joint. Two of these, J and K, are alike and are ring-like pieces with a flange at one end to be bolted to, in the case of one, the clutch sleeve D and in the other to the disk L on the front end of the shaft L1 in the gear box. Each piece is made with a cross slot to receive an end of the link G forming the cross of the joint, which has on either end cross parts G1 and G2, one being at right angles to the other and each made with rollers at the end. A short leather housing H encloses the only exposed portion of the joint.

In the gear box the mainshaft is in the bottom of the case and the countershaft N directly above it. Both gear case ends are bored to receive the bronze bearing cages W and in the top is a large inspection plate. Both sliding units P and Q work on the squared mainshaft M which has its forward bearing in the hollow end of the clutchshaft L1 and integral with this shaft is the gear L2 constantly in mesh with a large gear R on the countershaft, which revolves on all speeds. Gears on the countershaft are retained by double Woodruff keys placed at quarters and the gears are maintained in position by spacing tubes V between them. By using two sliding members it is not necessary to pass through gears and is further possible to drop from high speed to reverse or low speed. In driving direct the sliding gear Q made with dental clutch teeth on the forward end, is locked through similar teeth on the rear end of the clutchshaft gear L2, the drive then being along the shaft M. For all other speeds power is first carried to the countershaft through gears L2 and R and then back to the mainshaft through the pair Q and R1 on second speed, P and R2 on slow speed and through P and R3, together with the idler X, on the reverse. In shifting the two gears P and Q one lever Y, shown in the rear view of the chassis, is used. This works in a double slotted quadrant between a pair of short arms, one at its left side and the other at its right. One arm is attached to an outer sleeve and the other to an inner sleeve and the sleeves are in turn connected at their inner ends with the two sliding rods D and C, which enter the front end of the gear box. One of these rods is connected with the sliding gear Q and the other with the gear P within the case. When the lever Y is in the position shown in the gate in the quadrant, the short arms are held against it by flat springs. On each arm is a pair of lugs, one at either side of the lever Y. When the lever is pushed sidewise into the inner slot it is locked with one arm and if moved to the forward position of the slot gives slow speed ahead. The back position in the slot gives the reverse. When the lever Y is in the outer slot it locks with the outer arm connecting with the sliding gear Q and when moved forward in this slot gives direct drive and second speed when moved back. The gear box

Operating Levers on the New Stoddard-Dayton Car

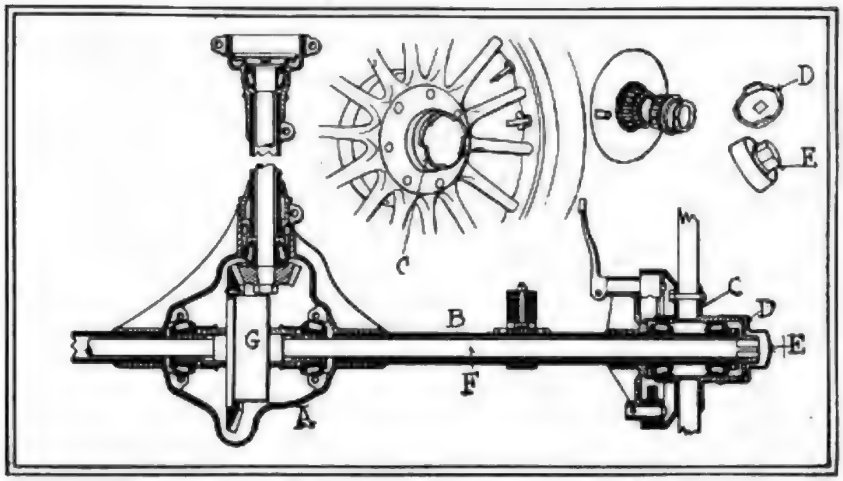
is a heavily-made aluminum housing with four arms resting directly on the subframe. The casing and the motor, as well as all the operating parts of the machine, are protected by a metal apron extending from the front to the rear of the gear box. This apron is made small and snug by using sheet metal plates between the main and subframe pieces and having only the apron extend between the subframe pieces.

On the rear end of the shaft leaving the gear box is keyed the regular brake drum S. This brake like the emergency on the rear hubs is of the expanding shoe variety, the shoe T being supported on a carrier on the gear case housing and provided with a covering of camel hair fabric. Double coil springs serve to keep the shoe off the drum when not engaged. This brake is applied by the right pedal, the connections with the shoe being through a chain, wheel and lever, with a cam for expanding the shoe. The brake is interconnected with the clutch, releasing the latter when the brake is applied. The clutch is in turn interconnected with the throttle, so that the application of either regular or emergency brakes throws out the clutch and throttles the motor. The emergency brake shoes are interchangeable with that used on the regular brake and are expanded by a cam movement connected with the brake lever at the driver's right, the lever when the brakes are not applied standing vertically at the right of the seat and not interfering with entrance to the front seat. The interlocking system between either brakes and the clutch is simple. The clutch pedal H is carried on a short shaft and connects with the clutch through the rod and lever H1, the lever being on a cross shaft with arms for carrying the yoke for the clutch. The emergency brake lever shaft carries on its inner end the two-arm lever K, the top arm of which is connected with the brakes and the under one through a rod E with the clutch shifting rod, so that in applying the brakes the lever when carried to the front moves the under arm of the lever K to the rear, withdrawing the clutch, and the clutch when withdrawn acts through the arm J and rod I with the throttle, closing it. From the rod I the other throttle connection with the small lever on the steering column can be noticed. The foot brake being on the same shaft as the clutch pedal is interconnected by a short lug on the brake sleeves so that when the pedal is pushed ahead this lug locks with the sleeve on the clutch pedal, thereby carrying it forward also, but per-



Stoddard-Dayton Gear Case, Flexible Coupling and Clutch

Digitized by Google



CONSTRUCTION OF STODDARD-DAYTON FLOATING REAR AXLE

mitting of the clutch pedal being carried forward for disengaging the clutch without applying the brake.

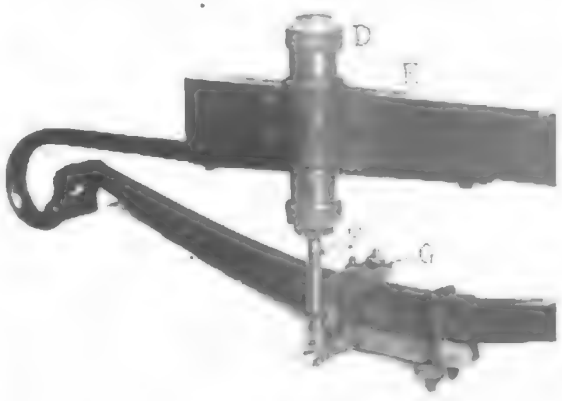
The propeller shaft to the rear axle is housed within a casing acting as a torsion rod between the gear box and the axle and for removing the strain off the shaft when running. The front end of the housing forms a covering for the universal joint in the shaft, the housing proper being mounted in a ring, the outer part being spherical and located within a similar socket attached to a cross piece of the main frame and the joint being of the sliding variety cares for irregularities owing to spring depressions. In the rear axle the differential housing A is split horizontally above the drive shafts, the top part being readily removable for inspection purposes. The drive shafts F simply rotate the road wheels, not being called upon to carry any of the car's weight, it being protected by having the axle casing B extend through the hub of the wheel and the Timken roller bearings being carried between this housing and the wheel hub C. In locking the drive shaft F with the wheel hub, the shafts which are squared where they enter the spur gear differential G are also squared to receive the lock nuts D, these nuts having jaw teeth for interlocking with others on the outsides of the wheel hubs D. Over these are placed the hub caps E. By this construction the entire drive shafts can be withdrawn from the housing by simply taking off the hub caps, removing the clutch caps D and then the differential can be lifted out through the opening in the top if the housing. The construction of the rear brakes is shown, the brake drum being bolted to the wheel hub and the shoe carrier supported direct to the axle housing. The differential housing is strengthened by webs across the front angle spaces and by having the housing sleeves long.

Stoddard-Dayton bodies for 1906 bear strong resemblance to the present style, being, of course, larger. Accommodation for five is furnished, the tonneau seating three and its floor is made sloping, rising toward the front and beneath it is a tire carrying compartment in which an outer casing and several air chambers can be stored. The gasoline tank is placed beneath the front seat and a tool box is made within the step to the rear seat. The dash is made in one piece instead of three, as formerly, and on it is mounted the four vibrator coil. Considerable difference is found owing to the change speed lever rising from the footboard within the body. Hood design remains the same, the upholstering is in full leather heavily tufted and the standard color, Stoddard-Dayton pearl gray, remains.

A new muffler has been added in the cooling system, the present one of horizontal tubes giving place to one with twenty vertical flat tubes connecting between upper and lower water tanks. The tubes are separated by a double set of zigzag flanges giving the appearance of a honeycomb construction.

TAKES UP THE SHOCK

Anti-shock absorbers for automobiles, that a few years ago were a novelty on any motor car are today counted upon as the ordinary equipment of many machines. The early styles of these devices were all constructed on the friction principle consisting generally of a pair of friction disks held firmly face to face by bolts or screws and one of the disks attached to the axle of bottom half of the spring and the other secured to the vehicle frame. Of late the air cushion device has been receiving most attention and of late a new one has been brought out. This device is made by the Sheddan Mfg. Co., of Baltimore, Md., and consists of an air chamber D enclosed at both ends and secured to the side piece A of the car frame by a bracket E. Within this chamber is a double-acting piston made rigid with the piston rod F. This rod is in turn pivoted at its lower end to a stud projecting from the bracket G attached to the vehicle spring. The action of the piston and the air cushions is simple. When the car drops into a rut or gutter in place of its going down with a sudden jar it is eased down by the air chamber D being forced down on the air cushion above the piston and when the car rises out of the rut or strikes an obstruction the frame portion is prevented from rising by the air cushion beneath the piston. Both ends of the chamber D are airtight so that the piston attached to the rod F is constantly working up and down between a pair of air cushions, one of which is compressed whenever the other is expanded, and vice versa.



SHOCK ABSORBER OF SHEDDAN MFG. CO.

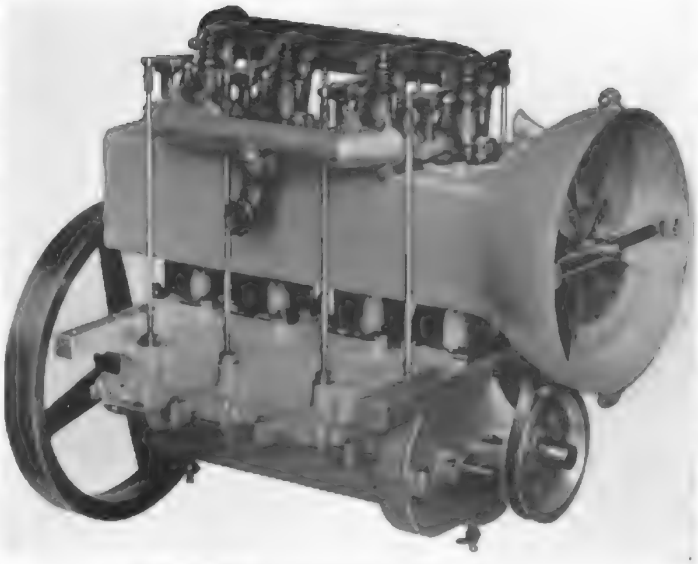
NEW TREBERT MOTOR

The Trebert Gas Engine Co., of Rochester, N. Y., has added to its regular list of gasoline engines for automobiles an air-cooled type, in which cooling is accomplished by the use of fins inserted in the sides of the cylinders, and then enclosing the entire cylinder in an aluminum housing and forcing an air draught through this housing and consequently around the cylinder walls by means of a rotary fan carried in front of the motor. The air blast from the fan to each of the cylinders is conducted through a large aluminum blow pipe carried along the left side of the cylinders, with a branch going to each cylinder. The branch to each cylinder enters the aluminum housing for the cylinder so that the air current is directed around the entire casting. The heated gases exit from the bottom of the cylinder housings and pass out through the bottom of the car bonnet or back through the flywheel, which is made with small spokes, giving free exit to these gases. The blower construction is shown in the illustration and the front end of it is enlarged to carry the fan which is driven by a flat belt from the end of the crankshaft. This location gives the fan a speed equal to that of the crankshaft and insures a strong air blast directed to each of the cylinders. The top part of each cylinder wall is fluted vertically, these being for containing aluminum fins used in conducting the heat from the cylinder walls. Each fin or rather each pair of fins is made by taking an oblong sheet of aluminum and folding it lengthwise in the center, leaving a hollow round portion in the fold. This rounded part is inserted in the flute. After folding the sheet is pushed into a toothed form, the parallel wings extending from the fold the same as the teeth in a comb extend from the back. After this the wings are twisted

Digitized by Google

as to extend transversely from the central portion and at right angles to it.

Aside from the cooling scheme few interesting points are met with in the motor. Both sets of valves, mechanically operated, are located side by side in the cylinder heads, recourse being had to a pair of camshafts one in either side of the crankcase and valve actuation from these through pushrods and overhead rocker arms, one end of the rocker arm being pivoted to the top of the push rod and the other resting on the valve stem head. The bore and stroke are 3½ and 4 inches respectively and the rating is 16 horsepower. A crankshaft speed range between 150 and 1,800 revolutions per minute is claimed. Simple intake piping from the carbureter as well a s exhaust piping to the muffler is used, and the latter is noticeable in that it is of large diameter and well removed from the cylinders, thereby keeping the heat away from them. Splash lubrication is used.



NEW THEBERT AIR-COOLED FOUR-CYLINDER MOTOR

USING BALANCED THROTTLE

Wheeler & Schebler, Indianapolis, Ind., makers of the Schebler carbureter, are retaining their carbureter for the coming season in much the same form as it has been used this season with the exception of a few improvements, among which is the use of a balanced throttle for those motors using a governor for caring for the throttle valve. This throttle consists of a drum A sliding horizontally within the casing part X. One end of the drum, that next to the carbureter nozzle, is open and the other one closed so that with the drum occupying a position close to the carbureter casing proper the passage to the motor by the opening C is closed. In the opposite end of the drum A are slotted openings, one of which can be noted at J, and through these the mixture escapes to the motor. The balancing feature of the throttle consists in having the casing X near the slotted end of the drum made slightly larger than the drum diameter as shown at L so that when the drum is drawn by the rod B to the position shown in the illustration the mixture commences escaping to the motor. Ordinarily, as the pipe C connects from the upper side of the casing X, the tendency would be for the escaping mixture to pull the drum toward the top part of the casing, causing it to bind and slide stiffly, thereby not being as sensitive as it should to the speed of the motor. To avoid this binding the increased diameter at L which surrounds that end of the drum has been used and now the mixture instead of passing out of the slots at the top side of the drum passes out through them, all around the drum head and exists by way of the surrounding opening L to the entrance of the passage C.

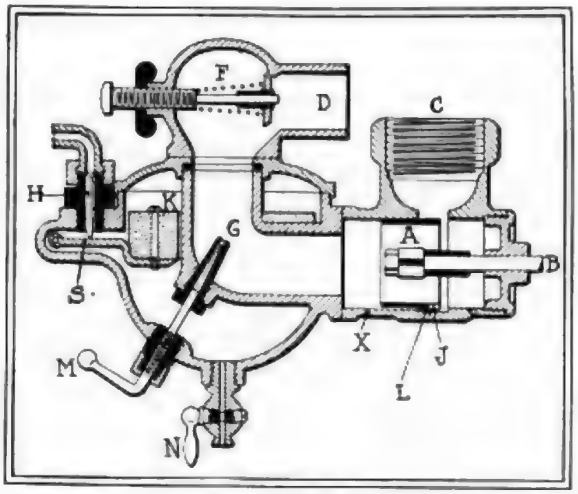
In the other details of the carbureter few changes are encountered. The air supply is still located at D, with a spring controlled valve F, always partially but never entirely obstructing the passage. On slow speeds the valve remains almost closed, but with each increase in motor suction it opens, thereby permitting more air to pass the angularly placed spraying nozzle G located in the elbow of the mixing passage and exactly in the center of the ring-shaped float K. External adjustment of the nozzle is by the finger lever M and at the base of the float chamber is a stop cock N for draining off the gasoline supply. The control of fuel from the gasoline tank in the car remains the same, the pencil-shaped valve H serving to open and close the passage. This valve rests on an arm S, the inner end of which is attached by screw to the bottom of the float, so that the valve varies with the level of gasoline in the chamber.

VERTICAL MOTOR IN ELMORE

One of the attractions at the coming shows will be the new five-passenger Elmore touring car in which is placed a vertical four-cylinder, two-cycle water-cooled motor. Its maker, the Elmore Mfg. Co., of Clyde, O., has previously made machines with the horizontal type of motor with never more than two cylinders and the bringing out of a large touring car shows that the company's faith in the two-cycle proposition is increasing and that the vertical two-cycle motor is ready to take its place in the field of automobile construction. The motor with its bore and stroke of 4½ and 4 inches respectively has a rating of 35 horsepower and couples through a Mercedes type of ring clutch with a sliding gear set giving three forward speeds and one reverse. Final drive is by propeller shaft. An Elmore carbureter, fashioned along Krebs lines, is used, lubrication is by a Hill oiler, roller contact is used in the commutator and standard control features are found. In the running gear tubular axle construction with Hyatt roller bearings is used, the wheel base measures 104 inches, tire measurements are 34 by 4 inches in front and rear and pressed steel exists in all parts of the frame construction. The body is a graceful production having Napier lines visible in many places except in the Mors type of hood. Side entrances are wide, a straight dash carries several of the small parts and a running sideboard connects the front and rear fenders. The other Elmore model is a 24-horsepower, horizontal cylindered machine. In it the power transmission is through a planetary gear set and shaft to the rear axle. Many changes are noted in its construction over the present model.

CRAWFORD'S LEADER

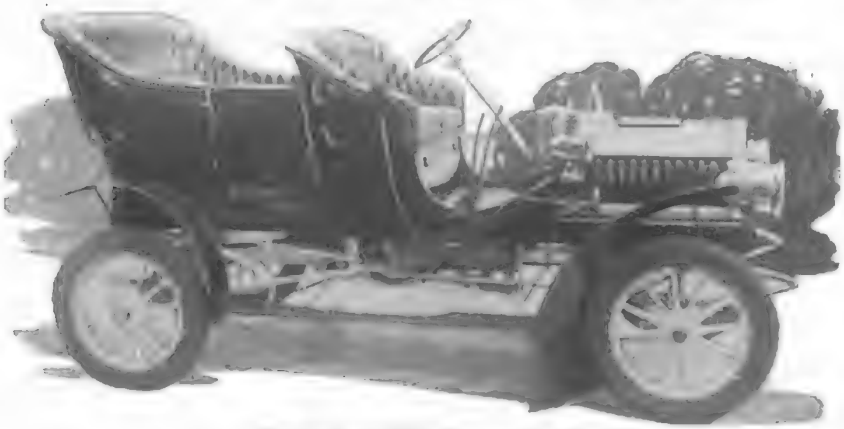
A five-passenger touring car with a 24-28-horsepower four-cylinder motor will be the leading model of the Crawford Automobile Co., Hagerstown, Md., for the coming season. This machine is vastly different from the present five-passenger machine of the firm in that the cylinders have a measurement of 4½ inches bore and stroke. A new gear set operating on the selective principle and giving three forward speeds replaces the present individual clutch type, but final drive through a pair of side chains connecting the sprockets on the end of the jackshaft with those on the rear hubs remains. Six inches have been added to the wheel base, its present measurement being 100 inches. The road wheels have been increased to 34 inches and 3½-inch tires fitted. Ball bearings are features of the transmission set and jackshaft as well as with the road wheels. Good baggage-carrying space is provided in the body, there being several compartments for such.



SECTION OF SCHEBLER CARBURETER WITH BALANCED THROTTLE

Digitized by Google

LOGAN LINE FOR NEXT YEAR



THE 1906 LOGAN FIVE-PASSENGER CAR

BOTH air and water-cooled motors will be used on Logan machines to be built by the Logan Construction Co., of Chillicothe, O., during the coming season. Two large pleasure cars with accommodations for four and five passengers, are fitted with the Logan two-cylinder opposed motor carried beneath the body. The other pleasure vehicle, a two-passenger runabout has an opposed air-cooled motor carried crosswise beneath the bonnet. It is connected by a combination of shaft and single chain drive, whereas single-chain drive from the engine shaft is used on the two water-cooled machines. The water-cooled cars are known as models G and H, the former having cylinders with a bore and stroke of 4¾ and 5 inches, with a rating of 20 horsepower, and the latter with a rating of 30 horsepower, its cylinders having 5½ by 6-inch measurements. The air-cooled model, rated at 10 horsepower, is known as style F. In all three models a sliding gear set giving two speeds ahead with direct drive is used. Final drive through a single chain remains a feature on all types. Model G has a 90-inch wheel base, 30 by 3½-inch tires and weighs 1,655 pounds. In model H the wheel base measures 100 inches, the wheels are 32 inches with 4-inch tires and the weight approaches 2,150 pounds.

Logan frames are made of angle steel, the angles having a wall thickness of ¼ inch and the angle arms being 2½ and 1½ inches wide. All parts are riveted. Reinforcing pieces are used at the corners of the main pieces. Attached to the center of the frame on either side are peculiar shaped brackets, to which both the front and rear radius rods are attached by hinged bolts. The front and rear ends of these radius rods are fastened to the spring seating on the front and rear axles. The rear rods have turnbuckles with double threads for chain adjustment. Axles are made from steel tubing. The spring suspension is a full set of four elliptics, the rear pair being slightly the longer.

Horizontal motors are used exclusively by this concern. In the water-cooled models they are placed lengthwise beneath the body at the left side, with the sliding gear set placed so that its main shaft is in line with the crankshaft. Drive to the rear axle is direct by single chain. The motor crankcase is in three parts, making it possible to remove the mainshaft or camshaft gears without dismantling any of the engine. Each cylinder is an integral casting, the cylinders within being both ground and lapped, giving a good finish. The crankshaft is an open hearth drop forging, and connecting rods are also drop forgings, with bronze bushings at the piston ends. Inlet valves are made 1⅜ inches in diameter, the same as the exhausts, and are automatically operated. Mechanical oilers are used, the drive for them being through rachet and tappet from the camshaft. Other motor facts are jump spark ignition with current from duplicate sets of dry or storage cells, float feed carbureter and cooling aided by a gear driven pump. The radiator is of the tube variety with fins surrounding each tube. From it the circulation is to the pump and thence to the bottom of the water jackets.

Compactness characterizes the sliding gear set case, which takes its supports from a couple of cross pieces of the main frame, these pieces also carrying the front and rear cylinders. A contracting band clutch serves as a flexible connection between the crankshaft and gear set and between the two is a sprocket for the chain drive. The clutch construction is standard. On the motor flywheel is a cast flange, around which bears a steel band, lined with Gandy belting. The ends of the band are attached to a pair or fingers pivoted near the middle. By forcing a cone between the bottom ends, to which rollers are attached, the clutch band is tightened. On the top forward speed drive is direct, no gears being in mesh, in which case the sprocket for the chain drive revolves at the same speed as the crankshaft. On slow speed and reverse a counter shaft is brought into use, a sliding gear serving to communicate power between the main and counter shafts. All speeds are gained by one side lever, the gears being so interlocked that changes in speed cannot be made without first disengaging the clutch, which, by the way, is operated by a side lever. A slight forward movement of this lever, after the clutch is disengaged, applies a brake on the transmission gear. The rear axle is of Weston-Mott construction and is fitted throughout with Hyatt roller bearings. The chain sprocket surrounds a spur gear differential and on either side of the latter is a Raymond double-acting band brake. Both are applied by pedal, the regular brake being located on the transmission.

Both cars have representative 1906 bodies, being featured by false hoods with radiators forming the front of them, wide side entrances, large fenders connected by running boards and heavy full leather upholstering. Straight dashes are used. On the inclined steering column below the wheel are throttle and spark levers, each working on separate quadrants. The body lines are easy, the rear seat being slightly higher than the front one and very wide. Model G has divided front seats and a detachable rear one.

Using an air-cooled two-cylinder motor in its 10 horsepower runabout can be looked upon as one of the leading 1906 features of this company, in that both air cooling as well as runabout construction are new with it. The runabout, model F, is typical of all cars of the light class weighing 900 pounds, having a 90-inch wheel base, 28 by 3-inch tires and standard tread. The frame is a simple rectangle of angle steel with the motor, gear box and jackshaft carried on cross pieces. Spring suspension is by a set of four full elliptics, those in front being 30 inches long and those in rear 36 inches. Both seats are attached in standard form. Steel tubing of medium gauge forms the front axle, the Lemoine type of steering knuckles being carried in the usual form. Front wheels revolve on ball bearings, but Hyatt rollers are used throughout the back axle. Radius rods 10 inches long serve for

CHASSIS OF THE LOGAN TOURING CAR

Digitized by Google

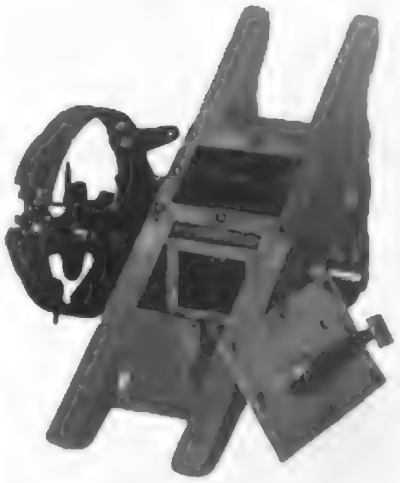
adjusting the drive chain and also in taking the strain off the road rear wheels.

Somewhat unique features combine in the motor and gear box arrangement, as well as in the final drive. The motor is of the opposed two-cylinder style, carried crosswise beneath the hood. Directly in the rear of it is the sliding gear, set with both shafts of the gear set longitudinally of the frame, being in this regard different from the water-cooled models. From the gear box a short shaft drives to a jackshaft by bevel gears. From the jackshaft a single chain connects with the live rear axle. The use of the jackshaft is imperative because of the final chain drive, as well as owing to the gear box having its shafts placed longitudinally.

Cylinder measurements — bore and stroke—of the motor are 4⅛ inches each. In cooling recourse is had to circular copper flanges, thirty-five of them being fitted over the outside of each cylinder which has its outer surface turned to receive them. Each flange has a depth of 1½ inches and they are placed as close together as possible, being not more than ¼ inch apart. The cylinders are made with the heads integral and the latter are cooled by radiating metal flanges. A novelty is shown in the copper hopper-like device on the top of the crank case, which permits of the cover on the case being left off and a screen covering taking its place, the screen allowing a free air circulation within the chamber, but preventing the escape of the lubricating oil therefrom. In addition to these cooling features an 18-inch, six blade, rotary fan is carried on the front of the crank case and is driven at crank shaft speed, being placed direct on the front end of the shaft. Fiber is used in the fan blades.

Both inlet and exhaust valves are mechanically actuated and operate vertically in ports on the front side of the cylinder heads. Each valve is contained in a separate housing bolted to a flange on the cylinder head. In opening the valves a bell-crank arrangement is furnished, one arm of the crank resting on the end of the valve stem, the other being pivoted to the end of the push rod. These rods are typical throughout, being driven from a camshaft in the top of the crank case. Ground joints are used, doing away with gaskets and other packing around the valve cages. The crank shaft is a drop forging running in a pair of end bearings each 3 inches long and having a diameter of 1½ inches. Bronze bushings are used in these as well as in the crank throws and wrist pins. Machine steel is used in the camshaft. Four close-fitting compression rings are used on the pistons. The wrist pins are made from machine steel case hardened, and the connecting rods are steel drop forgings.

Two speeds and a reverse are given by the sliding gear transmission. The main shaft is connected with the motor through an external band clutch, the diameter of which is 9 inches and the face width 1¾ inches. This clutch is the same as used on the water-cooled models. High speed is on the direct drive and on slow speed and reverse the usual counter shaft and idle pinion are used. From the rear of the case power is transmitted through a short shaft



LOGAN SLIDING GEAR SET

with a level pinion on its rear end meshing with another bevel on a sleeve on the jackshaft. This shaft remains stationary and is 1 inch in diameter, but the sleeve carrying the bevel revolves and is 9 inches long. It has a bronze bushing throughout its entire length. A ball bearing takes care of the end thrust. From this shaft to the back axle drive is by a single Diamond roller chain. Braking is by a pair of bands clamping on 6-inch drums on either side of the differential. The rear axle is of Weston-Mott construction and the steering gear of Brown-Lipe design.

A new design of Logan muffler is used on all models. This is of the cylindrical type with several concentric chambers, the gases passing from one to the other, through circles of perforations.

Body lines are typically runabout. The bonnet, with a screen front, is shaped similarly to the Premier or Franklin runabout hood of the present season. The steering column is well inclined, and from the seat the body lines descend gradually to the rear furnishing room for tools, tires and spare parts beneath it. On the dash is the usual quota of coil, oiler, switch, and other parts. Small fenders are fitted.

AUTOCAR MODELS FOR '06

Three Autocar models are announced by the Autocar Co., of Ardmore, Pa., for the 1906 season, one of which is the present runabout, flying several new feathers; the new model, a 24-horsepower five-passenger touring machine, and the third the present four-cylinder touring car, maintained in its present form. In the runabout the left side, horizontal lever steering and control features have been altered. Now a wheel steering outfit is installed on the right side with throttle and spark grip control at opposite sides of the steering wheel. A clutch pedal has been installed, and the gear shifting and emergency brakes levers placed outside of the body at the right side, making the machine operated exclusively from that side. Two horsepower have been added to the motor by increasing the bore to 4 inches, the stroke, 4 inches, remaining the same. Its rating of 12 horsepower is based on normal crankshaft speed. A mechanical oiler has been placed above the motor, taking the place of the present automatic type and 4 inches have been added to the wheel base, making that measurement 76 inches. The 24-horsepower machine is an embodiment of most of the present features and in general lines of construction follows the lines of this year's four-cylinder machine. The body, however, is hung higher and made considerably roomier with a few other features included. The cylinders have a bore and stroke of 4 and 4½ inches, the wheel base is 100 inches and Hyatt roller bearings are fitted in the gear box and rear axle. Plain bearings are used throughout in the motor.

THE 1906 LOGAN AIR-COOLED RUNABOUT

Digitized by Google

HOLDER YOUNGSTERS OF ST. LOUIS, WHO ARE EXPERT MOTORISTS

Chicago After Chauffeurs—The city of Chicago has advertised for two chauffeurs for the cars now owned by the municipality. It is demanded that they be experienced, law-abiding and without police records, the salary being $1,200 a year.

Ross to Go South—Louis Ross, the holder of the Sir Thomas Dewar trophy, has made arrangements with the Stanley people for the building of a steamer according to his own plans and specifications. This machine is all but finished. The car will be ready for its trial in about a week, and then some interesting work will be done on a secret practice course.

Youthful Drivers—St. Louis motorists have watched with interest the development into expert drivers of the young sons of J. M. Houser, president of the St. Louis Globe Democrat. The elder boy, Douglas, aged 11, guides an Autocar runabout with great skill. Chicago, too, has a youthful driver in young Nelson Morris.

Show Dates—General Manager Miles, of the National Association of Automobile Manufacturers, announces that the following shows, in addition to the national show to be held at Chicago, February 3-10, have been sanctioned by the association: Washington Automobile Dealers' Association, Inc., February 3-10; Tri-State Sportsmen's Association, Detroit, February 12-17; Cleveland Dealers' Automobile Co., February 19-24; Buffalo Automobile Trade Association, March 5-10; Boston Automobile Dealers' Association, March 10-17; Denver Automobile Show Association, a date in April to be hereafter decided upon.

Truce at Grand Rapids—The fight between the police and the automobilists at Grand Rapids, Mich., is over. After the last outbreak of the authorities the bicycle police were pulled off and the motorists can now run as fast as they like without the fear that an officer with a stop watch waits on every corner. The superior court calendar, however, shows that the cases against four hotelkeepers, one of the hotels being partially owned by Mayor Sweet, for violation of the Sunday liquor law, will be up for trial this month. These cases are said to have been brought at the instance of the automobile club in retaliation for the strenuous measures used by the authorities last summer.

To Move In—In Paris they are using the automobile to move with, it being no unusual scene to see a young couple, with the loose ends of their household which were too precious to risk in a moving van, driving through the streets in a car, which is loaded to the guards with bric-a-brac and other breakable articles.

Giant Iceboat—Commodore F. M. Underwood, of the Toledo Power Boat Club and head of the Toledo Machine & Motor Co., of Toledo, O., is working on his new iceboat, which he hopes will do a speed of 100 miles per hour. The boat will be driven by a gasoline engine, and will travel on land, water or ice.

Courtesy Pays—An Appleton, Wis., motorist has introduced an innovation in the jollying line. On the back of his car is a large sign reading "Thank you" which he displays by pulling a string when he has passed a farmer who has swung over and made room for him. In almost every case, he says, this courtesy has been acknowledged by the farmer.

In Bowden's Place—Despite all statements to the contrary, H. L. Bowden, who drove the mile in 34⅗ seconds last year, will not be a competitor at the Ormond meet this year. He will be a passive spectator, but will not race. Boston will, however, send a new claimant for speed honors to Florida in the person of J. R. Harding, a prominent Brookline man who recently purchased a 90-horsepower Mercedes, and will be on hand to test his speed.

Trophy Winners—Winners of trophies in the contests of the Long Island Automobile Club were announced last week at the annual meeting. John H. Emanuel covered 6480 miles in a White steamer and won the Mersereau mileage mug. Charles Jerome Edwards traveled in six different states in a Cadillac touring car so he got the Mackey meandering memento. Dr. C. B. Edwards won the Long Island club's economy cup with his Franklin. E. C. Kinney landed the president's cup for bringing in twenty-four new members. Officers elected were: President, Alfred Wilmarth; vice-president, Edwin Melvin; secretary, Walter G. Pierson; treasurer, Charles Jerome; governors for 2 years, Frank G. Webb, Dr. C. B. Barker and John H. Emanuel.

Good Roads Deal—At the good roads convention at Parkersburg, W. Va., December 4, all the national association officers were present. A permanent state association was formed and the work was placed under the supervision of vice-presidents for each county in the state. This is welcome news to Pittsburg motorists who have tugged long and hard to get over the country roads in that state.

Good as Cow Pony—Officer John Schiffert, of Allentown, Pa., is an up-to-date cop. One day last week a herd of thirty-five cattle escaped through a broken fence at the abattoir of Arbogast & Bastian into the country north of that town. The minion of the law, not finding a horse handy, impressed a passing automobile into service and with the aid of a lariat succeeded in corraling the entire herd within an hour and a half.

Herkomer Route—As planned now the Herkomer 1906 tour will be over the following route: The course is 1,500 kilometers in length, beginning at Frankfort-on-the-Main, thus: Frankfort to Munich, 371.7 kilometers; Munich to Linz, 240.3; Linz to Vienna, 166.6; Vienna to Vienna-Neustadt, 80.3; Vienna-Neustadt to Semmering, 47; Semmering to Bruck, 57.2; Bruck to Loeben, 15.5; Loeben to Aussee, 125.8; Aussee to Salsburg, 100.6; Salsburg to Innsbruck, 160.1; Innsbruck to Munich, 133.9 kilometers.

New Idea—The pupils at the Hackley manual training school, at Muskegon, Mich., one of the largest manual training schools in the west, are now engaged in learning how to transform bicycles into motor cycles and also the construction of gas engines for boats and automobiles. They are using machinery purchased by the board of education but are engaged in the constructing of machinery which they will install next spring. The board has purchased six sets of castings for 2½-horsepower gas engines for either stationary or marine engines. At the end of the year, if the pupils wish to own the engines, they may do so by paying for the castings.

Bay State Aggrieved—The motorists of Massachusetts feel somewhat slighted over the fact that in making out the route for the Glidden tour of next year the touring committee has seen fit to overlook that state in making out the schedule for the return. At the present time it is proposed to send the tourists from Bretton Wood to New York through Vermont, thus giving Massachusetts the go by. This, however, it is understood, has not been definitely settled upon and it is possible that the committee may decide later to send the tour over the beaten path of Massachusetts and Connecticut. It is done unquestionably on account of the experiences at Leicester on the last tour, but it is admitted by some of the tourists that there was a little fast work on that occasion even if the penalty did fall on innocent shoulders. However, that is not the question. There is reason to believe Massachusetts will next year, as it did in the last

Digitized by Google

tour, furnish a great number of entries and under those conditions it is entitled to some little consideration, it is felt. It is proposed by several of the organizations to pass a vote requesting the committee to more fully consider the claims of Massachusetts.

Delegates Appointed—At the meeting of the members of the Lucas County Good Roads Association at Toledo, O., last week, the following delegates were chosen to attend the first annual convention of the state organization to be held at Columbus January 11: J. W. Kerr, F. J. Norris, C. S. Ashley, Frank Spangler, J. H. Crawford, all of Toledo; C. W. Shoemaker, of Waterville; H. A. Taylor, of Swanton, and Thomas Crofts, of Oregon township. Another meeting will be held on January 5, at which time each delegate will appoint ten additional delegates. The state meeting will ask the legislature to provide a fund for the inauguration of the new movement in the state.

Owners Organize—The latest automobile organization in Boston is known as the Automobile Owners' Association, which has been formed to protect owners of cars from unjust arrest, and also to prevent reckless and dangerous driving. It is intended to try all complaints for alleged overspeeding, as well as to appeal such cases worthy of it. The association will provide attorneys for so doing without cost to each member in excess of the annual dues. By this means it is hoped that towns can be dissuaded from making indiscriminate arrests and deprived of the revenue which convictions in such cases produce.

Slow in Michigan—The Michigan statute regulating automobiles will soon become a dead letter unless chiefs of police and sheriffs, in whose hands the enforcing of the law lies, are more strenuous in their efforts to see that all owners are properly registered. To date there have been only 2,935, while the lowest estimates place the number of machines in the state at 5,000. The applications for licenses are coming in slowly and the number of new licenses is not greater than the number of new owners of automobiles. The law directs police and sheriffs to see that no machine runs without a license and it is likely that some steps will be taken toward determining those in the state who have not complied with the law.

Tip for Gliddenites—J. H. Morrow, manager of the International Carriage Co., at Brighton, Ont., which is about half way between Cobourg and Belleville and 90 miles from Toronto and 72 miles from Kingston, on the line of the Glidden tour for 1906, writes MOTOR AGE that he is willing to furnish information regarding the condition of the roads. He says that in July, 1904, he followed the route mapped out for the tour in Canada only he did not go to Picton through Prince Edward county, keeping close to the water all the way to Kingston and Prescott instead, having to cross on a ferry at a point some 3 miles below Picton. He declares the roads are better direct by Belleville and Napanee than the way he went to Kingston. From Kingston to Brockville there are three routes. The line from Prescott to Ottawa is declared to be a poor one, Mr. Morrow suggesting that instead of going that way the tourists travel through Morrisburg, 12 miles further on, where there is a fine stretch of macadam, while through Prescott there is a stretch of 24 miles of horrible roads.

Names, Please—W. L. Smith, 524 Penn avenue, secretary of the Automobile Club of Pittsburg, desires secretaries of all automobile clubs in Pennsylvania to communicate with him with the idea of forming a state association.

Wins Two Medals—F. C. Gates won both the trophies presented by the Cleveland Automobile Club, one for the member covering the greatest number of miles from December to December, and the other to the member completing the longest tour. Gates traveled 7,531 miles in the 12 months, 300 miles more than Charles H. Coit. W. C. Curtiss was third. Gates' longest tour was 904 miles, running from Cleveland to Indianapolis, to Chicago and then back by way of Toledo. Gates drove a Winton.

It's Different Now—It's a good thing for property owners that Pittsburg has an automobile row. Three years ago one could have bought property on Center avenue, Baum and Beatty streets, East End, for little more than half what it now costs. Since the $20,000 home of the Automobile Club of Pittsburg was completed and became the recognized center, values in that vicinity have been going up rapidly. Instead of the big liveries that used to supply the swell turnouts in the East End there are now seven large, fully equipped automobile establishments, besides two stores where automobile parts are sold—all within an easy stone's throw of the club house. The liveries were losing their business so fast that two of the big barns have been turned over this year to new automobile companies which have remodeled them for garages at a large expense. The Banker Brothers, Standard, Hiland, Central, Liberty and East Liberty companies are all within hailing distance of each other and another new firm will join the bunch early in the spring. Only one of these concerns owns its property, the Hiland, which recently bought a large site in Center avenue and is building a $25,000 garage. The other buildings are leased or were erected on ground rents.

Buffalo Show—Application blanks for space at the fourth annual Buffalo automobile show, which will be held at Convention hall the week of March 5 to 10, are ready for distribution, and can be had by applying to the manager, Dai H. Lewis, at the rooms of the Automobile Club of Buffalo, 760 Main street. The allotment of space will be made Tuesday, January 2.

Now They'll Be Good—Philadelphia's director of the department of public safety has organized a new bureau for the special protection of the public in the central section of the city. It will be made up of mounted patrolmen under the head of a police captain. The mounts will be horses, bicycles and motor cycles—no less than fifteen of the last named to be in constant use during the busiest part of the day. They are for the special purpose of enabling the cops to overhaul automobiles and other vehicles which travel faster than the legal limit. Stop-watches are to form part of the equipment of each officer, and as the sleuths have been doing mathematical stunts for the past week in order to enable them to quickly calculate speeds, many arrests along this line are expected, as orders have been issued for a strict interpretation of the mile-in-6-minutes ordinance. Indeed, quite a number have already been made of automobilists who have exceeded the limit on Broad, Chestnut, Walnut and other much-traveled streets. Each officer of the new bureau is provided with a whistle which emits a peculiar and far-reaching shriek, and if the culprit manages to get away from one the next will be waiting for him. Recent arrests have developed the fact that counterfeiting and changing of tags is being carried on quite generally, and all offenders in this respect will receive an additional dose of the law's medicine. The Quaker automobilist will hereafter be compelled to live up to his reputation as a conservator of the peace or take the consequences of his law-breaking actions.

FRENCH COUPLE USES AUTOMOBILE FOR MOVING VALUABLES

Digitized by Google

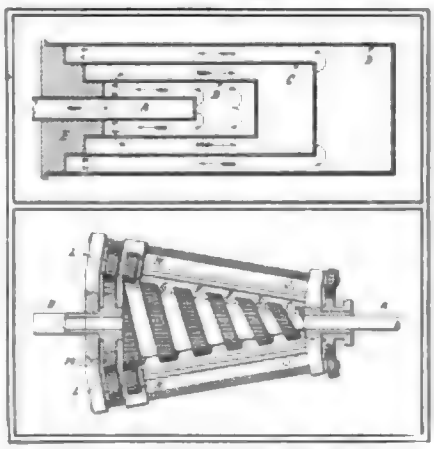
Current Automobile Patents

Sliding Gear Set—No. 806,316, dated December 5; to Charles E. Bertels, Wilkesbarre, Pa.—In this gear set of the sliding type the feature consists in having four shafts—A from the flywheel, B immediately in rear of this and connected by the clutch F and having on the other end the gear E; C a squared shaft with sliding gears H and K, and in rear the short shaft D connected to shaft C by the clutch L and having a beveled pinion for transmitting the power to the differential, which is carried in the rear part of the case. A countershaft M carries three gears Q, P and N, the last being continually in mesh with gear E on the shaft B. On direct drive the two clutches L and F are engaged simultaneously through the operating mechanism R, and the internal gear K is shifted so as to mesh with the rear half of the gear E. In this way the four shafts A, B, C and D are linked together and drive is direct to the differential. For second speed the clutches L and F remain engaged and the internal gear K which has also an outer gear face is meshed with gear P on the countershaft, the drive being through shafts A and B and gears E and N to the countershaft and from this shaft through gears P and K to the shaft C and thence through the shaft D to the differential. For slow speed gears H and Q are used and in reversing the regular idler is introduced. Both clutches L and F work together, being engaged and disengaged at the same time and the apparent object of their use is the doing away of the clutch and the flywheel of the engine.

Multi-Tube Muffler—No. 806,714, dated December 5; to John M. Porter, Parkersburg, W. Va.—Exhaust gases enter the muffler, through a piping A extending half way through the muffler, which has perforations in its inner end for the gases to enter through. The muffler proper consists of three concentric tubes, B, C and D, each secured to the common part of the casing E. Tubings B and D have both ends closed and the escape of gases from them is through small perforations near the part E of the muffler, but in the tubing C the perforations for the escaping gases are in the form of a circle in the end of the tubing. The flow of gases through the muffler is shown by the arrows, the perforations, being respectively placed in the opposite ends of the successive tubes, cause the gases to travel from end to end of each tubing and having each tube of greater diameter and length than the one within it, the gases are given sufficient expanding room.

Friction Drive—No. 806,392, dated December 5; to Zadock B. Starr, Gloversville, N. Y.—This scheme of friction drive has a few points of difference over those already used in this type of automobiles. On each end of the crankshaft of the motor D is a large friction disk A against which bears a small friction wheel E on the forward end of a longitudinal shaft which carries a similar friction wheel F on its rear end. The later wheel F works between large friction disks C and C1, both being on a shaft which carries a sprocket on its outer end for drive to the rear wheels. In driving ahead, the friction wheels F are in contact with disks B1 and C so that both rear wheels are driven in the same direction and in reversing these gears are made to contact with the disks B and C1.

PORTER'S MULTI-TUBE MUFFLER



ROSEWARNS' SPIRAL GEAR

To get different speeds ahead, arrangements are made so that the shaft carrying the gears E and F can be slid to the front or rear. When in the former position, gear E bears on the disk A near its center and is consequently driven more slowly than when it bears on the disk near its periphery, and at the same time the wheel F bears on the disk C near its periphery, driving it still more slowly. On high speed E is practically at the periphery of A and F is as near as possible to the center of C, and on slow speed their positions are reversed.

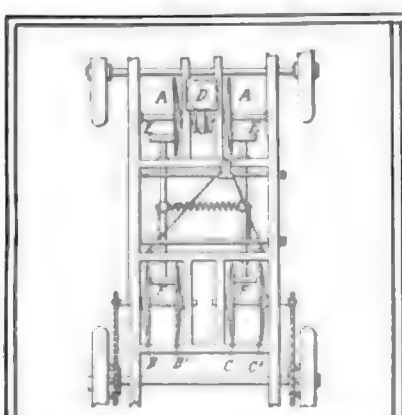
Rear Wheel Drive—No. 806,452, dated December 5; to Charles S. Bauld, Latrobe, Tasmania, Australia—In constructing a rear wheel for an automobile the inventor uses a hollow hub A with an internal race of teeth in which mesh the pinion C, carried on the bottom of the T-shaped arm B, the horizontal arms of this piece having plain rollers for contacting with a plain ring on the inside of the hub. The power is transmitted through the pinion C, thereby causing the wheel to rotate.

Spiral Change Speed Gear—No. 806,190, dated December 5; to Richard E. Rosewarns, Covington, Ky.—In this gear box, which is suitably illustrated, the shaft A connects with the motor and clutch and carries on it a spiral gear, arranged on a cone-like shaft, the spiral gear having toothed surfaces, C, D, E, F and G. The shaft B connects with the rear axle and has rigid with it the large gear M, constantly in mesh with a pair of pinions L. These pinions are on long shafts J, upon which are the sliding pinions H and K. By meshing these with the respective gears C, D, E, F or G, as many variations in speed can be obtained, the gears H and K of course being arranged to move together at all times.

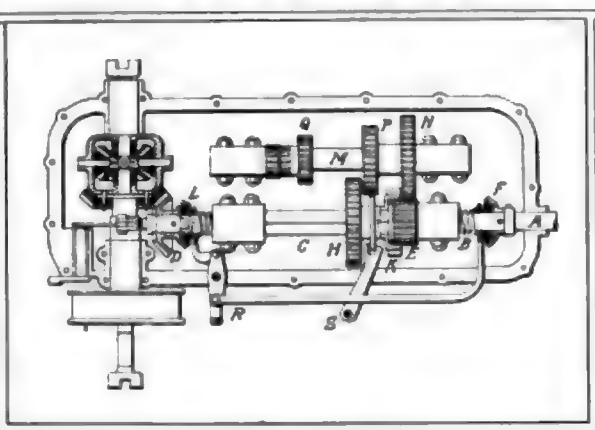
Two-Tube Muffler—No. 806,715, dated December 5; to Nathan W. H. Sharpe, London, England—This muffler has two concentric tubes; one which forms the casing and an inner one of slightly less diameter and of the same length as the casing. Gases from the motor enter the inner tube at the forward end and passing through it leave it through perforations at the rear end and then pass to the forward end of the outer casing, where they are liberated through a series of perforations. The gases in passing between the inner and outer casing have their progress interrupted by eight baffle plates each filled with small perforations.

Tubular Muffler—No. 805,613, dated November 28; to Frederick S. Williams, Amsterdam, N. Y.—In designing his muffler for silencing the exhaust of a gasoline engine, the inventor makes use of a long cylindrical casing of medium diameter, within which is a nest of tubes similarly arranged to the tubing in a return pipe radiator. Hot gases first enter a central tube of a large bore and from the farther end they are conducted into a series of smaller tubes extending from one end of the muffler casing. From these they finally exit into a large chamber from which they pass to the outer air.

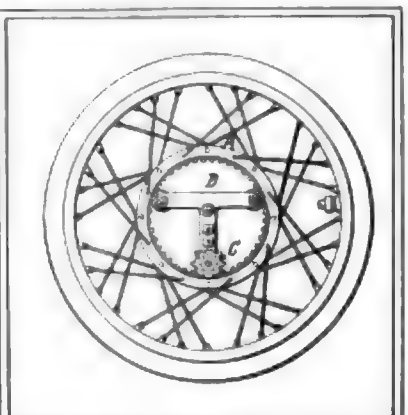
Rear Axle Drive—No. 805,567, dated November 28; to Thomas J. Lindsay, Indianapolis, Ind.—The inventor has so designed his differential housing that the entire differential gear can be removed through a cap in the top of the housing without withdrawing the drive shafts from the axle, connecting the differential bevels with the road wheels. He accomplishes this by constructing the housing so that the top half can be removed in line with the bearings and each drive shaft from the road wheel instead of entering the bevel of the differentials and being keyed thereto, is connected by a jaw type clutch with a short shaft made integral with the bevels, the short shaft being axially in line with the drive shafts to the wheels. The clutches permit of lifting out the whole differential gearing when the top half of the housing is removed. The jaw clutches, having their jaws at the same angle at each side of the differential, allow of this.



STARR'S FRICTION DRIVE



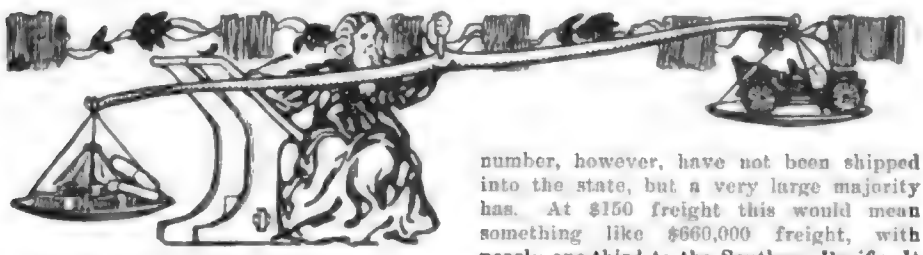
BERTELS' SLIDING GEAR



BAULD'S REAR-WHEEL DRIVE

Digitized by Google

LEGAL LIGHTS AND SIDE LIGHTS



FIGHT FOR FERRY PRIVILEGE

San Francisco automobilists are exceedingly wrought up over what they term too stringent regulations regarding the automobile ferry traffic on the broad gauge boats plying between this city and Oakland. The automobile dealers have not taken kindly to the new ruling made by the Southern Pacific Co. for the transportation of the modern chariots and as a result they will seek to divert the freight trade that falls to the S. P. by way of retaliation. Some time ago they conveyed automobiles at all hours, but on October 15 new rules went into force that raised a howl from the dealers. The Northern California Automobile Dealers' Association is a new factor in the local motor firmament and evidences of its strength are already becoming apparent. The matter which this new organization is at present much taken up with is that of obtaining more just treatment at the hands of the Southern Pacific. To this end the association adopted a resolution a few days ago and the automobilists are anxiously awaiting the outcome of the fight against the railroad. The resolution is as follows:

Whereas, The Southern Pacific Railroad Co. has arbitrarily cancelled privileges heretofore granted owners and users of automobiles on its ferry boat system crossing the bay of San Francisco between the cities of San Francisco and Oakland; and

Whereas, Said owners of automobiles and dealers in same are shippers of a large amount of freight over the lines of said railroad, and such action on part of said railroad has materially interfered with the business of said owners and dealers in automobiles; be it hereby

Resolved, That the dealers in automobiles hereby agree to hereafter route all their shipments over other lines than those controlled by the Southern Pacific railroad, and under no circumstances will they permit any of their freight to be carried by said Southern Pacific railroad during the season of 1906, or longer, unless the unjust restrictions be immediately removed, and all the privileges heretofore enjoyed by said owners and dealers in automobiles be immediately restored to them.

In discussing the affair with the MOTOR AGE correspondent one of the dealers said:

"We want the Southern Pacific to make more liberal rules. As San Francisco is situated, the restricting of the ferry service means that the people will not buy automobiles if they have to continually leave the city by way of the peninsula. This makes a 100-mile trip if one wishes to go to Oakland and fails to make the ferry at times designated by the railroad people. If the Southern Pacific insists on the present rules we are going to ship our cars by other routes if we have to send them up north and bring them to the city on the steamers. Not only that, but we expect that every dealer in automobile supplies will join us in this movement. Up to the present time 4,393 automobiles have been registered at Sacramento. All of this number, however, have not been shipped into the state, but a very large majority has. At $150 freight this would mean something like $660,000 freight, with nearly one-third to the Southern Pacific. It can easily be claimed that the railroad has received over $200,000 in freight charges from the automobile trade, and it is this which we are going to try and turn into other channels if we cannot get more liberal terms in the way of transportation on the ferries. By working through the Northern California Automobile Association I think we can work to better advantage and compel the railroad to treat us fairly. With all the money the automobile trade turns over to the railroads we ought to be treated with consideration. It is a senseless thing to expect us to make such a roundabout trip to get to Oakland if we are unlucky enough to strike the wrong hours at the ferry."

QUAKERS FIGHT NEW LAW

Attorney Ira J. Williams, counsel of the Automobile Club of Philadelphia, has filed a bill in equity in common pleas court, enjoining and restraining the city from taking any action under the local automobile law on and after January 1 next. The automobile club is supported in this action by the Philadelphia Automobile Trade Association, which named a committee to co-operate with the club. The trouble seems to hinge on the question whether, in a large city, the state or municipal law is paramount. The legal officers of each insist its own law must be observed, and the automobilists are up in the air. There is quite a little wad of money involved also, the Philadelphia bureau of boiler inspection, which has been issuing local licenses, having taken in about $5,000 during the present year, charging $2 for new licenses and $1 for renewals. Under the state law charging $3 per, this amount will be materially increased in 1906, even without taking into consideration the naturally-to-be-expected large increase in the number of applicants. The legal action taken by the automobilists is a friendly one, the local authorities being as desirous of securing a legal solution of the puzzle as are the plaintiffs themselves—H. Bartol Brazier, Charles S. Wurts, Jr., and Samuel Y. Heebner, of the automobile club. The action is directed against the city of Philadelphia, John Weaver, mayor; Sheldon Potter, director of public safety; John M. Walton, city controller; John M. Lukens, chief of the bureau of boiler inspection, and Henry R. Shoch, city treasurer, and asks that they be enjoined from enforcing the ordinance of December, 1902, averring that it conflicts with, and is superseded by the act of assembly of April 19, 1905. The appellants ask for a temporary injunction, to be made permanent after a court hearing.

The state highway department has just issued a pamphlet containing the new automobile regulations. It emphasizes the fact that the operator is licensed—not the machine; that licenses cannot be transferred; that none but the regularly issued Pennsylvania tags can be legally carried on an automobile while within the boundaries of the states—the main clause around which the fight centers; that front and rear lights—the latter red, with a white side illuminating the rear tag—must be carried at night; that an operator must stop when signaled by an approaching driver; that speed in cities and boroughs must not exceed a mile in 6 minutes and outside these limits, a mile in 3 minutes, and that no borough or city has authority to fix a speed limit less than that established by the new law; that upon certification a license may be revoked for a period of 6 months upon the holder's second conviction of violating any of the provisions of the new act; and that the act applies to all forms of motor vehicles, motor cycles also coming under this heading.

TO ASK CONGRESS FOR LAW

During the coming session of congress efforts will be made by the commissioners of the District of Columbia to secure the amendment of the peace and order act of July 8, 1898, increasing from $40 to $100 the fine for carrying away the property of another without the right to do so, and also providing for imprisonment for 6 months, together with the maximum fine. Congress will also be asked to change the phraseology of the existing law so that "taking and carrying away" shall cover the movement of automobiles without the offender actually taking and carrying away the machine. These suggestions which the commissoners will make to congress are the result of a conference between Commissioner West, Judge Kimball, of the police court, and W. S. Duvall, president of the Automobile Club of Washington, and are a part of the campaign the club has inaugurated for sane legislation in regard to automobiles. The object is to secure a code of laws that will be as fair to automobilists as to pedestrians. The club is insisting on an amendment to the police regulations whereby persons guilty of tampering with automobiles, jumping in and out of cars left unguarded at the curb, manipulation of brakes or clutches, the tooting of horns, and other annoyances to which automobilists are subjected every day, be charged with disorderly conduct under the peace and order act, and subjected to a heavier fine than that now imposed. Heavier fines are also wanted for persons convicted of throwing stones and other missiles at passing automobilists. During the conference above referred to, the question of raising the speed limit for automobiles was also discussed. President Duvall set forth in detail the wishes of the club in this regard, and was informed that the subject would have due consideration by the commissioners.

Great consideration has been shown the club in the framing of these amendments.

Digitized by Google

IN THE REALM OF THE COMMERCIAL CAR

LOGAN LIGHT DELIVERY WAGON WITH AIR-COOLED MOTOR

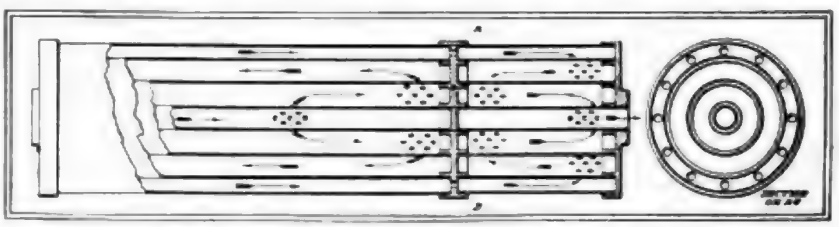
THE Logan Construction Co., of Chillicothe, O., has for the last 2 years been testing and experimenting with light delivery wagons and as a result of these efforts announces a new 10-horsepower air-cooled wagon with a load-carrying capacity of 1,500 pounds and weighing not more than 1,150 pounds. In order that the machine might be suited for a variety of light delivery work, a fairly high-speed ratio is used and a change speed set working on the sliding gear principle is installed, giving a fast and slow speed ahead and one reverse, the former ranging between 3 and 16 miles per hour. The company adopted the air-cooled motor not only because it has been proven perfectly satisfactory for the work, but because many prospective buyers are asking for such, dreading a water-cooled motor during the winter. This new machine has been under test for several months and has maneuvered with apparent ease a load 50 per cent in excess of its rating.

Most features common in placing an opposed motor crosswise beneath the bonnet are found in the design of this machine. A glance at the plan view of the chassis will reveal that the cylinders A are not placed as close to the front as usual and that a very long extension is needed on the starting crank. In the rear of the motor is a friction clutch much the same as the ordinary external band brake for coupling the motor with the sliding gear set within the case E. Perhaps the novelty of the entire construction appears in the transmission of power from the gear set to the rear axle, for instead of using shaft drive as is frequently used when a gear set is hung with its shafts parallel with the side pieces of the frame the Logan concern uses a short shaft F from the gear case, carrying on its rear end a bevel within the housing G, the bevel meshing with a similar bevel within the housing H. The latter is on a sleeve L on the stationary jackshaft K. From this sleeve the drive is by single chain to the center of the rear axle. In this design is all the advantages of a sliding gear set combined with those of single chain drive, this drive being preferred to a jackshaft extending across the entire frame and with double side chains for driving to the rear road wheels.

This power transmitting scheme calls for several cross parts in the frame construction, there being not fewer than eight pieces, as well as one light cross brace and other braces from the cross brace to the rear frame piece. The main side pieces of angle steel have a uniform wall thickness of ¼ inch and have the channel walls respectively 2½ and 1½ inches wide. To these pieces all cross parts are riveted, with gusset plates for reinforcements. In spite of the numerous cross pieces the motor is not carried directly on them but supported through a pair of longitudinal members that bear upon the cross pieces, the longitudinal pieces being dropped and having the ends of the cylinder heads resting upon them. A little additional support is gained by having bolts in the cylinder heads pass direct through the main frame side pieces. Four full elliptic springs carry the frame, the front and rear pairs being the same size, 36 inches long, 1¾ inches wide, with five leaves each. A double radius rod scheme saves both pairs from the pulling strain, leaving them to perform only a load-carrying duty. The rear pair is at the top, bolted directly beneath the frame side pieces and rests on seatings on the axles, with a radius rod connection at the front angle of the spring. This radius rod is made short, connecting with a bracket on the frame not far in advance of the front of the spring. It has a turnbuckle for adjustment. Longer radius rods protect the forward pair of springs, coupling with the frame midway of the front and rear road wheels and being attached direct to the axle inside of the spring seating.

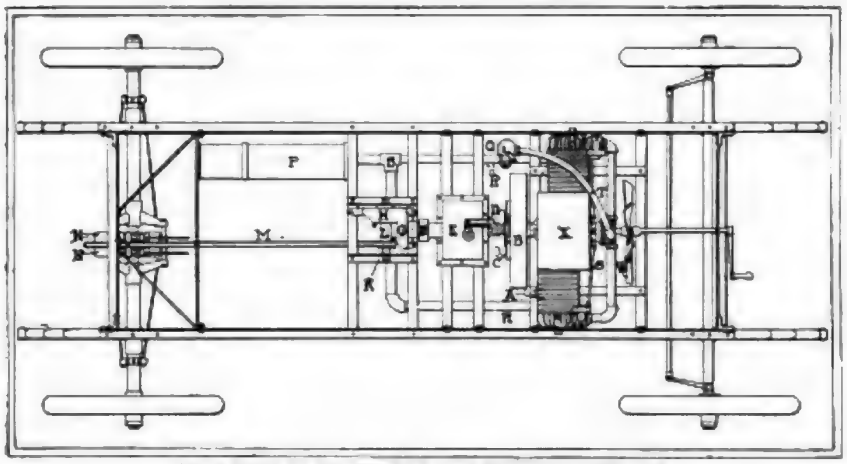
Both axles are of tubular construction, the forward being slightly dropped in the center and carrying the usual Elliott type of steering knuckles, which are connected through rack and pinion steering gear with the steering column, set at about 15 degrees from the vertical. On this column are spark and throttle control levers. The rear axle is of Weston-Mott design throughout, and is 1⅜ inches in diameter and carries a spur gear differential. The axle housings enclosing the drive shafts are fitted with roller bearings and in the center carry a pair of opposing three-arm spiders between which are placed the differential and a pair of external double-acting Raymond brakes N on either side of it. Truss rods from brackets on the axle ends aid in supporting the spiders and through them strengthen the axle. Road wheels are 32 inches in diameter and carry 2-inch solid, side-wire, Diamond tires. The tread of the machine is standard and the wheel base 86 inches.

Air-cooling in the motor is accomplished by turning the outer surfaces of the cylinders and pressing over them circular copper flanges, placed ¼ inch apart, each perforated to aid in the radiation of heat. The top of the crankcase is left open and in it is placed a hopper-like contrivance which prevents oil from the splash system of lubrication being wasted and at the same time permitting of heated gases from the interior of the case as well as from the cylinders, escaping. A rotary fan for additional cooling is carried on the front end of the crankshaft. Cylinder heads are made integral with the walls and are cooled by radiating metal flanges. Both sets of valves are mechanically operated and placed in separate cages bolted to the front side of the cylinder heads, the valve stems being vertical in each case. Bell cranks serve in transferring the power



MUFFLER USED ON LOGAN AIR-COOLED DELIVERY WAGON

Digitized by Google



PLAN VIEW OF CHASSIS OF LOGAN COMMERCIAL WAGON

from the push rods to the valve stems, one end of the crank being pivoted to the end of the push rod S and the other resting on the top of the valve stem. The camshaft is in the top part of the crankcase. A regular float feed carbureter shown in the plan illustration at Q connects through a curved pipe T, that branches in front of the crank case and connects with both inlet valves, the mixture traveling an equal distance to each pair of cylinders. Separate exhaust pipes R lead from the exhaust valve ports and unite at the union S, passing from this direct to the muffler—this piping construction is designed to keep the hot gases as far as possible from the cylinders. Jump spark ignition is used and in lubricating a pressure sight feed oiler is made use of, the oil tank being placed under the hood where the motor heat prevents its congealing in cool weather. Pressure for it is taken from the hot exhaust gases, which also aid in keeping it warm and at an even temperature. The connecting rods are fitted with ring oilers, both of the end crankshaft bearings are provided for and a separate lead enters the top part of the crankcase through the cooling hopper, it maintaining an even level within the case from which the cylinders receive a part of their supply.

A common band clutch connects the gear box with the flywheel B of the motor. On the flywheel is a broad flange shown at C and over this acts the brake or clutch band D. To the ends of the band are attached a pair of fingers, which are pivoted at their centers and by forcing a cone between the bottom arms of these the clutch band is tightened. The transmission gear works on the sliding principle, having a main and countershaft with drive on high speed direct along the former. The gear ratio is about 5 to 1. The peculiarities of the final drive have been referred to. The short jackshaft K is carried on a pair of frame pieces and is surrounded by a bronze bushed sleeve L to which is attached the bevel within the casing H and also the sprocket for the final single chain drive.

A variety of body lines are shown, some being of the low side variety to which any design of carrying compartment can be attached. Others are of the canopy top, wire-side style and a few of the enclosed type with rear entrances are shown. The control in all is the same, the features of it being steering wheel with throttle and spark levers, and besides these, speed change, clutch and braking levers and pedals. The bonnet is hinged to the front of the dash and has a screen front, but instead of the front of it being cut away toward the top it is straight and the hood perfectly plain.

In addition to this model the Logan company has ready a 2-ton water-cooled truck which is fitted with a two-cylinder opposed motor rated at 30 horsepower. The cylinder bore and stroke are 5½ and 6 inches. The general design of this machine follows that of the company's touring machines with the sliding gear set placed at the side of the motor and drive direct from a sprocket loose on the crankshaft to a jackshaft further to the rear and from the jackshaft double chains connect to the road wheels.

JUST WHAT IT COSTS

Tables showing the exact cost of operating a motor delivery wagon during the months of July, August and September have been prepared by the Joseph Horn Co., of Pittsburg, Pa. The tables were made up direct from the running book of the driver and show not only the amount of oil and gasoline required but the distances traveled, number of packages carried, number of trips made, as well as the number of those not made and a few averages on the work done. The machine that performed this work was a regular Oldsmobile delivery wagon that was delivered to the Horn company July 10 and put into commission on the following day, the period covered being from that date until October 1.

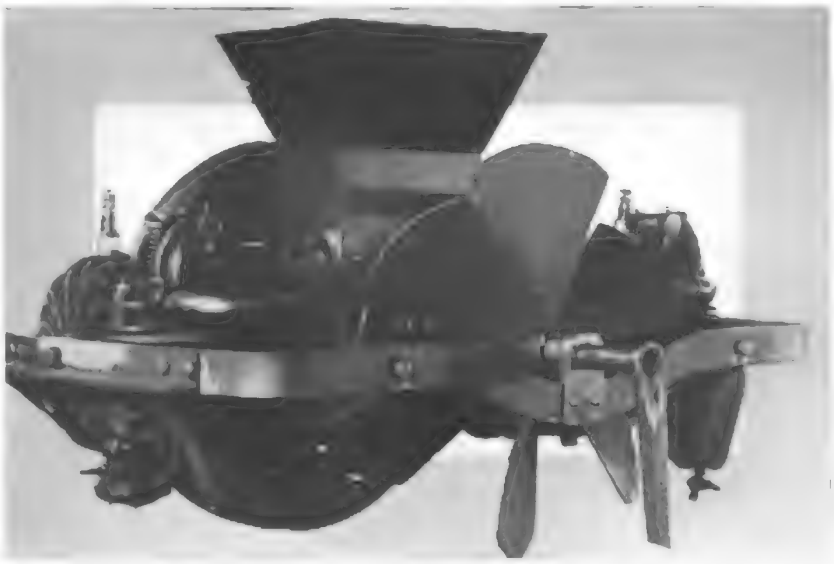
It must be understood that during the test the machine was not operated by an expert driver, but by one of the same class as is obtainable for such work. The attention and care given the wagon was as a consequence the same as any concern can give.

A glance at the tables shows that during the month of August the machine covered more miles than in July or September, but that fewer packages were delivered, due to the Horn concern changing the vehicle's route twice a week to different sections of the city where the delivery was light but the distances great. The routes traveled were among the hilliest in the Smoky city, but not on a single occasion did the wagon fail in its service. The exact duration of the following record was 65 days:

1905	Cost of material	Factory repairs at 30c an hour	Machine oil at 11c gallon	Engine oil at 17c gallon	Gasoline at 10c gallon	Total
July	$0.55	$7.00	$0.22	$0.52	$11.27	$20.56
Aug.	3.05	2.75	.22	.92	14.49	21.43
Sept.	3.92	4.62	.22	1.16	17.22	27.14
Totals	$7.52	$14.37	$0.66	$3.00	$43.98	$69.13

	Packages delivered	Miles run	Trips made	Trips lost
July	2,772	568	33	0
August	2,276	715	47	0
September	3,156	633	50	0
Totals	8,204	1,816	130	0
	Av. cost per package	Av. cost per mile		Av. cost per trip
July	$0.0074	$0.044		$0.6230
August	.0094½	.030		.4560
September	.0086	.043		.5430

Average cost per package, $0.0084; average cost per mile, $0.0380; average cost per trip, $0.5320.



TEN HORSEPOWER AIR-COOLED MOTOR IN LOGAN WAGON

Digitized by Google

Commercial Mile Stones

Used in Albany—W. W. Whitney & Co., of Albany, N. Y., have received a couple of Knox 8-10 horsepower machines for regular use. Solid rubber tires are fitted to each.

Canada in Line—A branch of the Intercolonial Railroad in Eastern Canada is to be fitted with gasoline motor cars, the passenger service on it not being sufficiently heavy to warrant the frequent running of steam trains.

As a Hose Wagon—The Howe Engine Co., of Indianapolis, Ind., has recently shipped to Hopedale, Mass., an electric hose wagon for the fire department of that city. The concern is at the present time completing a 32-horsepower gasoline motor for propelling a fire engine, which the company declares will be one of the first of its kind in this country.

In Hack Service—An Oldsmobile bus, the latest product of the Olds Motor Works, Lansing, Mich., has been placed in service by Carr & Son, proprietors of a hack line in that city. The bus is very complete in its appointments and seats twelve persons. It is entirely enclosed with curtains with windows, and the driver's seat is similarly protected. It is lighted by electricity furnished by storage batteries and heated by a system of piping from the exhaust.

Pooled Firemen—A big electric truck operated by a Cleveland brewery showed something of its power the other day when called upon by the Cleveland fire department to extricate a heavy steam fire engine which was stuck in the mud while on a run. The combined efforts of four strong horses had failed to get it out. About that time the big truck came along and the operator offered his services which were accepted with some doubts on the part of the firemen. It didn't take 2 minutes for the truck to shake the 4-ton steamer out of a foot of mud.

McCrea Plans—The McCrea Motor Truck Co., Cleveland, O., exclusive selling agent for the Champion commercial motor vehicles, made by the Champion Wagon Co., of Oswego, N. Y., is making great preparations for the trade during the coming season. This latter concern has for 1½ years been making electric trucks of different sizes. Some forty of these are now being used by the United States Express Co. and with other firms. The factory has a capacity of 400 per year, the sizes ranging between 500 pounds and 12 tons load capacity.

Tackles Big Game—It is stated that a Detroit automobile company is about to make a spread in business by putting the automobile squarely into competition with the railroad, the trolley car and the livery stable. The statement is that the concern is already preparing to work out of Detroit to the suburban towns and that if the scheme works the plan will be pushed in other sections of the state. If the company starts its system Kalamazoo will be one of the first places at which the experiment will be tried. It is expected that the populous and progressive southwestern

DAYTON PARCEL DELIVERY

part of the state will furnish the best field for experiments, the like of which have been tried in only a few sections of the United States.

Dayton Likes Them—The use of the commercial automobile in Dayton, O., is still young but so far is meeting with good results by those using light machines. Morgan & Wright's branch house and repair depot has used a light car with much satisfaction for some time. The company keeps the machine in a garage when not in use and the monthly expenses—oil, gasoline, washing, repairs and other incidentals—amount to $12 per month. The November bill amounted to $12.30. The machine is in daily use attending to the various customers of the firm and carrying freight to and from the depot, which, however, consists chiefly of goods required by the branch and others being returned to the factory. Another commercial machine used is a 1½-ton Knox wagon in the service of Brown Bros. This machine has a load-carrying capacity of 1,500 pounds and the average cost of gasoline and oil is 1 cent per mile. The wagon averages 50 to 75 miles per day and has maintained this average since June, 1904. Repairs thus far aggregate $100, which includes a pair of new solid tires for the front wheels. The rear tires show a good deal of wear but are good for another year. The business of the concern is general delivery work in which express parcels and parcels from local stores comprise the most of the load. Speed is one of the essentials of this machine and the company has found that it is owing to this particular feature of it that the work has been so successful.

C. & A. Sincere—That the Chicago & Alton Railroad is sincere in its intentions of installing motor cars of the gasoline type for suburban uses is proven by the delivery at Bloomington, Ill., of several gasoline motors intended for this service. The company hopes to use these specially in suburban work, in which sphere the electric trolley works havoc with regular railroad traffic.

Testing—As the result of 3 years' experimenting in the construction of heavy electric trucks, the Fuller Mfg. Co., of Detroit, Mich., will try out during the next few weeks a large 5-ton electric truck. A feature of it will be the using of a gasoline engine to drive a dynamo for providing current for the electric motors driving the road wheels. As soon as the demonstration shows the construction of the machine to be suitable for all classes of work a company will be organized and the manufacture of machines commenced.

In Pittsburg Fire Service—Pittsburg is soon to try an automobile chemical engine in fire fighting. The machine, which has been ordered by the Banker Bros. Co., will be a 45-horsepower Pierce chassis with extra long wheel base. It will have two 250-gallon chemical tanks, six small fire extinguishers, ladders, hose and the usual equipment of a chemical wagon. There will be room on the footboards for ten firemen and a chauffeur. The car will have sufficient capacity to fight small fires or big ones at the start and its speed, 40 to 60 miles an hour, will give it a big advantage in getting to remote suburban districts in a hurry.

MORGAN & WRIGHT'S DAYTON DELIVERY CAR

Digitized by Google

USING KEROSENE

Lansing, Mich.—Editor MOTOR AGE—Will you let me know through the columns of the Readers' Clearing House what changes must be made in the ordinary carbureter in order to use kerosene? I use a Kingston carbureter, with float in a separate chamber, and would like to know exactly what changes I would have to make in order to use kerosene. I understand that gasoline will have to be used in starting the machine and my intentions are to have the carbureter connected with the gasoline and kerosene tanks, using a switch.—H. A.

In using kerosene for a motor it is advisable to use a separate needle valve, as kerosene requires an opening of from 30 to 50 per cent over gasoline. Even though the needle valve is adjustable, this adjustment would have to be made in switching over from gasoline to kerosene. The motor can be started with kerosene if hot; if cold, gasoline must be used.

WIRING OLD BATTERIES

Hampshire, Ill.—Editor MOTOR AGE—In a dry battery for an automobile, two sets of five cells each are used. Each set is connected in series. As I understand it this gives the total voltage of five cells and the amperage of one. As the cells grow weaker the two sets are connected in parallel to the same binding post, giving the voltage of five cells and the amperage of two. After they became still weaker I thought I could make still further use of them by connecting one set in series and one set in parallel and connecting both sets to the same binding post on the coil. I then tried the ammeter on the parallel set and it ran the needle way up, so I thought I had it, but the coil failed to buzz. Can you explain my trouble? This is the way I connected the cells.—See figure 1.—GEORGE W. COOK, JR.

The trouble has been the result of a short circuit in the batteries. Referring to sketch of your writing, figure 1, 1, 2, 3, 4 and 5 are connected in parallel, while 6, 7, 8, 9 and 10 are connected in series. Connecting N 6 with N 1, would be the same as connecting 6 with 5, as the negative and positive wires are all in parallel; therefore, 1, 2, 3 and 4 would be cut out and the positive on 5 becomes negative. By using an ammeter with the positive wire on P 10 and the negative wire on N 5, it will show the maximum voltage. Connect the positive wire of an ammeter to P 10 and ammeter negative to P 5—as positive on 5 becomes negative—and the voltage of 5 and 10 will be indicated, usually about 4 volts for the two ordinary dry cells. To prove that the positive becomes negative on 5, connect the ammeter positive with P 5, and ammeter negative with P 10 and the ammeter needle will move back against the left hand stop. Immediately upon connecting P 10 with P 5 it produces a short circuit of the batteries. This reversal of negative and positive takes place at 1 and 2 by connecting 5 and 10, but this connection produces a short circuit in the batteries, the seat of trouble. Referring to figure 2—two sets of five batteries in series, connected in parallel—with positive and negative at A and positive and negative at B will produce the maximum voltage of the combined batteries. If no voltage is indicated with this it is time to recharge or get new cells.

FREEZING POINT

Linden, Ia.—Editor MOTOR AGE—Please state in MOTOR AGE how low a temperature the pure calcium chloride solution will stand in an automobile without freezing to do damage. I refer to the solution published in Motor Age some time in the early fall; 4½ pounds to the gallon of water.—E. H. MALLORY.

Watertown, S. D.—Editor MOTOR AGE—Now that cold winter weather is here, the danger of frozen radiators is with us. Can you give the formula of some composition that can be used in the radiators which will prevent water freezing and not injure the interior of the water jackets or pipings of the motor?—J. A.

A solution containing 5 pounds of calcium chloride to each gallon of water will freeze at 47 degrees below 0 Fahrenheit. Wood alcohol is being extensively used. This costs about 90 cents a gallon at wholesale drug houses. A solution consisting of ⅔ water and ⅓ wood alcohol will protect a motor to a little below 0.

FINDING SAND HOLES

Galesburg, Ill.—Editor MOTOR AGE—During the last 3 months I have had some novel experiences with my runabout. I would leave the garage early in the morning with the car running well for perhaps an hour, when suddenly it would lose power and finally stop. Then commenced a Sherlock Holmes tour of the electric system, carbureter and valves, with poor results. At night I would have it overhauled, the crankshaft removed, and the inner walls of the cylinder examined, but no cause found for the trouble. Half a dozen times the same trouble confronted me and as often the garage men overhauled the machine, as often did it start off well in the morning and suddenly lose power at inopportune times. Finally, almost distracted with the machine, I placed it in the hands of a repair man, with instructions to keep it and run it until the trouble was discovered. The discovery soon came. The first day the water jacket was tested, when it was found that a minute stream of water was issuing through the inner walls against where the piston would operate. The hole had evidently been formed by a grain of sand in the casting and had not appeared until after it had been used for some time. The cylinder being horizontal in the car, the water leaked into the bore in sufficient quantities to interfere with the workings of it. I had a new cylinder casting put in and the car has worked perfectly ever since. Can you give me the nature of the tests of water jackets before a machine is shipped from the factory?—PHYSICIAN.

The tests of water jackets vary with different manufacturers. Usually the first thing done to a cylinder casting when it comes from the foundry is to test the jacket. All holes are plugged with watertight gaskets, water is introduced into the cylinder through some convenient place, and a pressure gauge is fitted at another place. Water is forced into the cylinder by a high pressure pump up to 100 pounds or over. If there are holes in the casting they are readily discovered. This leak is sometimes caused by the slag in the moulten metal at the foundries, although the percentage of castings scrapped for this reason is very small. All concerns have their own methods of testing jackets and some builders scrape the outer water jacket walls in the hope of removing sand grains from the casting.

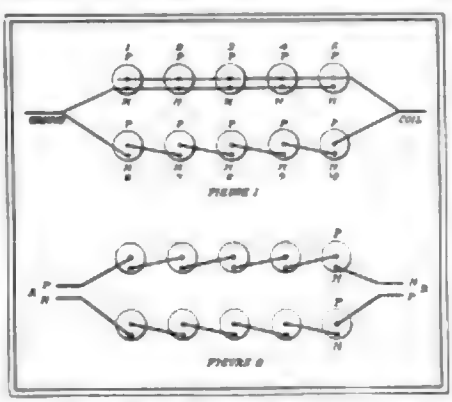


DIAGRAM FOR WIRING OLD BATTERIES

LOCATING AIR LEAKS

Albany, N. Y.—Editor MOTOR AGE—I am not going to bother you with questions this time, but write to tip off a couple of good things I have stumbled across and which I think may be of benefit to the readers of the clearing house. One of them is a sure way of locating a puncture. Of course, when you have a good-sized hole in the inner tube, it is no trick at all to find where the air escapes—it's the little pin pricks that make you scratch your head and worry. My scheme is to take aniline or other colored fine powder—a small quantity will be enough—and blow it into the inner tube. Then when you look for the pin hole puncture you simply blow up the tube, take a wet cloth and run it over the rubber. The dye is expelled through the puncture by the force of the air and the rag moistens it and causes it to leave a brilliant stain, which marks the seat of the trouble. My other tip is an easy way to test the quality of lubricating oil, which, as you undoubtedly know, should be neither acid nor tacky. Oil of the right sort is discovered by placing a drop on a polished copper plate. If it remains clear and keeps its color for several days it is O. K., but if it is acid it will turn green. If tacky it can be told by rapidly drying.—R. B. S.

Digitized by Google

TESTING A COMPOUND ON A 40 PER CENT GRADE AT THE MIDDLETOWN FACTORY

G & J Branch—The G & J Tire Co., of Indianapolis, is about to establish a branch in Philadelphia.

New Salesroom—Hatch & Co., New York agents of the E. H. V. Co., of Middletown, Conn., have established a salesroom at 1655 Broadway.

Maxwell Improving—The Maxwell people are refitting the old building in Detroit formerly occupied by the Olds company. Extensive improvements are being made in the building.

Bobs Up Again—You cannot lose E. J. Pennington. This time he hails from Grand Rapids, Mich., and he is endeavoring to interest Toledo capital for the purpose of establishing an automobile plant in that city.

Cameron Plant Moved—The Cameron car, which has been manufactured at Pawtucket, R. I., for the last 3 years, will hereafter be made in Norfolk, Va., its inventor having organized a company with $200,000 capital in the southern city.

How Compounds Are Tested—Among the many devices used by the E. H. V. Co. for testing Compound cars at its Middletown factory, is a 40 per cent grade, up which every car turned out must make its way without difficulty, before it is turned over to a customer. The grade is built of wood and is so arranged that cars cannot run off the edge of the roadway. It has been in use for a year or more.

Plug Maker—A charter has been granted to the Albright Mfg. Co., of Columbus, Ga., successor to the Camp Cycle Co., for the purpose of manufacturing the Albright spark plug, as well as numerous other accessories. The final organization of the company took place last week, L. A. Camp being elected president, E. P. Dismukes, vice-president; Paul Dismukes, secretary and treasurer and J. J. Albright, superintendent. The paid in capital stock is $14,000, with privilege of increasing to $100,000. A large brick building with over 15,000 square feet floor space has been leased. Anticipating the final organization of the Company, orders were placed some time ago for machinery, all of which is now here and is being installed.

New Carbureter—The Missnack Mfg. Co., of Detroit, is about to market a new carbureter, the invention of a local expert named Fishback.

Stoddard-Dayton Agencies—The Dayton Motor Car Co. announces the following list of its agencies for 1906: Chicago, McDuffee Automobile Co., 1449 Michigan avenue; New York, Stoddard-Dayton Agency, 1853 Broadway; Philadelphia, Hamilton Automobile Co., 206 North Broad street; Pittsburg, Central Automobile Co., 5989 Centre avenue; Buffalo, J. A. Cramer, 737 Main street; Boston, Randliff Motor Car Co., 24 Columbus avenue; St. Louis, Colonial Automobile Co., 3944 Olive street; Omaha, Deright Automobile Co., 1119 Farnam street; Cleveland, H. S. Moore, 160 Crawford road; Toronto, Automobile & Supply Co., 24 Temperance street; California, Norman W. Church, Hellman building, Los Angeles, Cal.; Minneapolis, Haynes Automobile Co., 220 South Sixth street; Denver, C. M. Wood; Indianapolis, Fisher Automobile Co., 330 North Illinois street.

LATE INCORPORATIONS

Boston, Mass.—The Penn Automobile Supply Co., of this city, has been incorporated with a capital stock of $10,000.

New York City—The Metropolitan Auto Co. has been incorporated with a capital stock of $25,000.

Newark, N. J.—The Austin Auto Co. has been incorporated with a capital stock of $25,000.

Homer, N. Y.—Among recent incorporations is that of the Baker Gear Co., with a capital stock of $70,000.

Newark, N. J.—The Calvert-Zusi Auto Co. has been incorporated with a capital stock of $20,000. Registered office, 213-215 Clinton avenue.

Atlantic City, N. J.—The New Jersey Touring Car Co. has been incorporated with a capital stock of $60,000. The object of the company is to manufacture automobiles.

Philadelphia, Pa.—Among the recent incorporations is that of the General Specialty Co., which intends to engage in the manufacture of building hardware and fittings, metal furniture, wagon and automobile fittings, etc.

Cooper to Change—Tom Cooper told a friend in New York that he was to leave the Matheson Motor Car Co. and go with Barney Oldfield in his vaudeville racing act on the stage.

Rands Moves—The Rands Mfg. Co., formerly the Wheeler Mfg. Co., maker of body tops and other automobile specialties, has just moved into its new quarters, corner of Macomb and Beaubien streets, Detroit. The building is well lighted on four sides covering an area 150 by 75 feet with two floors.

New in Detroit—A new accessory and sundry company has been organized in Detroit with W. E. Metzger president. The active management is in the hands of Messrs. McLean and Howard. The firm occupies the upper floors of the Metzger building. Besides carrying a full line of sundries the company will manufacture several specialties.

Energine Officers—The Energine Co., which was incorporated in Cleveland several weeks ago, has completed its organization by the election of William Greif as president, R. P. Beardsley vice-president, and Frank B. Many secretary and treasurer. The company has a capital stock of $500,000 and will build a plant in Cleveland for the manufacture of Energine.

To Make the Carter—Byron A. Carter, of Pontiac, Mich., has organized the Motorcar Co. of Detroit, to manufacture the Carter car embodying his friction transmission. The first model is nearly completed and a factory is being equipped. The officers of the company are: Frank T. Canghey, president; Fred Postal, first vice-president; Byron J. Carter, second vice-president; R. A. Palmer, secretary; Harry R. Radford, treasurer. The factory is at 230 Twenty-first street, Detroit.

To Interest French—E. V. Hartford, president of the Hartford Suspension Co., sailed for Europe last week. He is now going over to sell the foreign makers the license to make use of the device as it will be marketed in 1906. The new Hartford suspension is now fitted with a self-adjusting device, which requires no tightening up as in the past. There is a five-prong spring washer that takes up all of the inside wear, and the whole is held in place by a split nut of Mr. Hartford's own design. The sample has one double and one single arm, instead of two single arms. This makes it impossible for the arms to shear off.

Purdue's Testing Plant Working—Purdue university's new automobile testing plant, the latest innovation in the mechanical engineering department, has had its initial tryout, and it was found to be in perfect working order. Tests were run on Prof. Arthur Goss's Reo car, and the results obtained were according to expectations. The 16-horsepower machine, when driving at its maximum power, was always under perfect control of the testing force. The first test was a mild tryout, as the plant is capable of testing touring and racing cars of the highest power. After a few minor changes are

Digitized by Google

made in the arrangements of the plant several high-power 1906 machines are to be brought in for tests.

Franklin Man Dies—Harry Simpson, assistant treasurer of the H. H. Franklin Mfg. Co., died at his home in Auburn, N. Y., last week at the age of 27 years.

Increases Force—The Pope Motor Car Co., Toledo, O., has added about 150 men to its working force, in view of the new addition having just recently been completed.

Burning Question Solved—They have an artificial coal mine at the Packard plant in Detroit, the company having taken the precaution to lay in a stock of 3,000 tons of coal for a reserve supply.

Nearly Ready—The new factory building of the American Locomotive Automobile Co., which is to build the Berliet car in Providence, R. I., is nearly completed. The plant will be 375 by 63 feet.

Ode by Owen—Ralph R. Owen, of Cleveland, who secured the first 1906 Oldsmobile four-cylinder car delivered, has written the factory stating he has not made an adjustment since getting it and that he drove from Lansing to Detroit over the muddiest kind of roads without the engine making a skip.

Unique Party—A party of forty New York city automobilists spent Saturday in Bridgeport, Conn., as the guests of the Locomobile Co., of America. John F. Plummer, Jr., the New York manager of the Locomobile company, conducted the party to Bridgeport by private car over the N. Y., N. H. & H. R. R., and on arriving at their destination the party was taken to the Locomobile factory, where the day was spent going through the plant. All of the visitors on the trip were either purchasers of 1906 Locomobiles or prospective purchasers.

Car Wanted—The Eastern Automobile Co., of 326 North Broad street, Philadelphia, agent for the Peerless Motor Car Co. and J. Stevens Arms & Tool Co., has so outgrown its present quarters that it has given out contracts for building an addition to its garage and salesrooms. The new building is nearly three times the size of the present quarters and has more than twice the frontage of the present building on Broad street. There has been a change in the personnel of the company, A. B. Cumner resigning and L. Howard Smith, of Philadelphia, entering the firm. The company is now looking for another car to fill out its line for 1906.

Thomas In a Hurry—Without waiting for its completion, the E. R. Thomas Motor Co., of Buffalo, occupied a part of its new factory during the week. Rather than delay shipment, the expert mechanics were placed at their benches on the first floor of the new concrete building before all of the floor had been laid, and consequently visitors were given a sight of automobiles being set up within half a dozen feet of where other workmen were laying a concrete floor. While cars were being finished on the first floor, the last touches were being put on the roof. The new building is in the shape of an irregular letter L, and is 190 feet long by 195 feet, and is three stories in height.

BRIEF BUSINESS BITS

Chillicothe, O.—O. M. Houser has opened a garage on Mulberry street.

Pontiac, Mich.—The board of trade is considering the establishment here of an automobile tire factory.

Atlanta, Ga.—The Piedmont Motor Car Co. has secured the local agency for the Marmon car in that city.

York, Pa.—Theodore R. Helb is to build an automobile garage at the corner of King street and Howard avenue.

Baltimore, Md.—Jesse Lippencott Cassard, Jr., has acquired the agency for the Ford car here and will open in the Gill building as soon as it is completed.

Fostoria, O.—The Fostoria Motor Car Co., will shortly be formed for the purpose of manufacturing automobiles. The capital stock of the company is given as $300,000.

Indianapolis, Ind.—Having taken the Indiana agency for the Marmon car, the Gibson-Short Cycle & Auto Co. has greatly enlarged its establishment and expects to make still further extensions.

Rochester, N. Y.—A. L. Mora, of this city, will soon start an automobile factory in the village of Newark, if arrangements can be made with the board of trade. Alterations have already been started on a building for Mr. Mora.

Newark, N. J.—The building at 213-215 Clinton avenue is to be converted into an automobile garage. A deal has been consummated whereby the Newark Garage & Repair Co. becomes the owner of the property. George L. Paddock, of the Auto Vehicle Co., is the president; L. B. Zusi treasurer, and Andrew Schwind is the secretary and general manager. While this will be the holding company, and will occupy the major part of the building, two other automobile companies are connected with the establishment. They are the Auto Vehicle Co., which will handle the Thomas Flyer, and the Calvert & Zusi Automobile Co., which will handle the Winton in that section of the state.

Baltimore, Md.—An agency for the Pierce car has been established by the Southern Auto Co.

St. Louis, Mo.—The Van Automobile Co., 4706 Washington avenue, will handle the Marmon car in this city.

Boston, Mass.—C. H. Saunders has secured the agency for the Moline line of cars, which are well known in the west, but have as yet to be introduced here.

Tacoma, Wash.—The Reliable Automobile Co., agent for the Packard, Cadillac and Winton cars, has opened a garage and general repair shop at 111-115 South Eighth street.

Newark, N. J.—The Jackson Automobile Co. has established a branch in this city, which will act as general sales agent for the agents of New York, New Jersey and Pennsylvania. The branch is in charge of C. W. Oathout.

Boston, Mass.—Frank D. Stranahan, manager of a Tremont garage company, has decided to add an automobile supply department to his station. The Prest-o-lite tank agency, which has been in charge of P. A. Sheehan for the past year, has been turned over to Stranahan, who has also another.

Indianapolis, Ind.—The Elston Automobile Co. has closed its establishment and S. W. Elston has accepted a position as manager of the Indiana Automobile Co. This company has completed arrangements for the agency of the Oldsmobile, which was recently relinquished by the Fisher company. The Indiana company will also handle the Cadillac, Winton, Franklin and Autocar.

Worcester, Mass.—An addition 100 by 60 feet has been completed by the L. W. Pond Machine & Foundry Co. and the force at the factory has been increased. The manufacture of metal planers has been discontinued. The space which has been devoted to this industry will now be devoted to automobile work. The company is preparing for a first-class garage and repair department.

RALPH OWEN OF CLEVELAND, O., IN HIS NEW MODEL S OLDSMOBILE

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President.
Potter Building, New York.

CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.

JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.

FRANK A. EGAN, Secretary,
142 Nassau St., New York.

FREDERICK B. HILL, Treasurer,
92 Binford St., Boston.

National Headquarters
Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

Reduced Railroad Rates

to all members of the AMERICAN MOTOR LEAGUE who travel

to the City of New York

to attend the meeting of the A. M. L.—to which all automobilists are invited—beginning Monday, January 15, and ending Saturday, January 20, both dates inclusive. As this is the

Week of the Automobile Shows

our members will have an opportunity of taking part in convention work and of enjoying the gala week at the same time.

Important Notice—This reduced rate benefit is for league members only. Persons wishing to join the league and to receive this benefit should immediately send names and addresses—plainly written—with 1 year's dues—$2 for each applicant. The railroad associations will not grant reduced rates in aid of an automobile show or any other purely commercial enterprise. They will recognize only those certificates which are held by league members.

Each member who comes to these meetings should bring his membership ticket. This will save the trouble and delay of searching membership records. Every expired membership should be renewed. Full printed information will be sent on request. Address

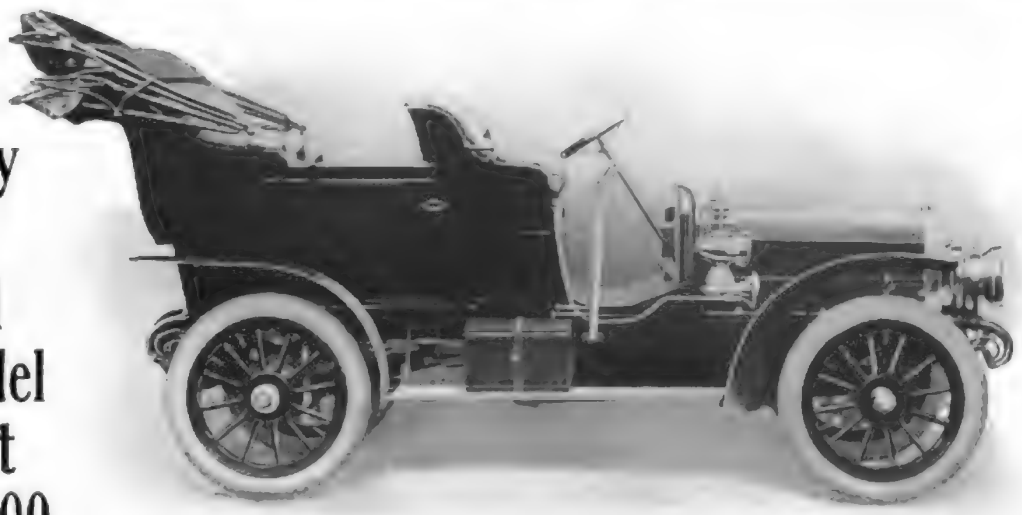
AMERICAN MOTOR LEAGUE

Vanderbilt Building, New York, N. Y.

Digitized by Google

WINTON MODEL-K

Why We Sell Model K at $2500



"I don't understand why you sell Model K at $2600. No other car is in its class at less than $3500, and I wouldn't trade my K most cars that sell as high as $5000.

That is a boiled-down summary of the verdict of practically every purchaser of the new Winton Model K.

And it states the truth in a nutshell, too.

Now we'll tell you why.

1.—This company is proud of its reputation. It was the first company in America or elsewhere to market a really high-grade car at $2,500, and it thereby set the pace that has made it America's foremost producer of motor cars. And **it intends to stay ahead.**

2.—We are making **only one model.** To produce two or more models divides the possibilities of real success. No man can serve two masters, and no automobile manufacturer can make two or more models at the same time and do himself justice. **To make one model well** is a supreme achievement.

3.—Our superb facilities—the largest and best equipped touring car plant in the world, and the fact that we **make for ourselves a greater proportion of the parts** used in the complete car than does any other touring car manufacturer, mean **economy of production,** by CUTTING OUT MIDDLEMEN'S PROFITS.

4.—For 1906 we set the price of $2,500 first, and then designed and constructed absolutely the best motor car which we, with our great facilities and long experience, could produce at a profit. Model K is the result. And——

Model K is unquestionably without an equal on the market.

DON'T compare it with other $2,500 cars; you would be **wasting your time.**

Compare it with cars selling from $3,500 to $5,000.

We'll risk our chances on your verdict.

MODEL K WINTON.—Four vertical, water-cooled cylinders, 30 H. P. or more. Quiet running. Abundant reserve power. Velvety, non-jar, non-shock, non breakable transmission. Flexible speed control. Shooting rider. Exclusive Twin Springs. Easy Riding. And every other feature that a real high-grade car should have. $2500 f. o. b. Cleveland.

The Winton Motor Carriage Co.

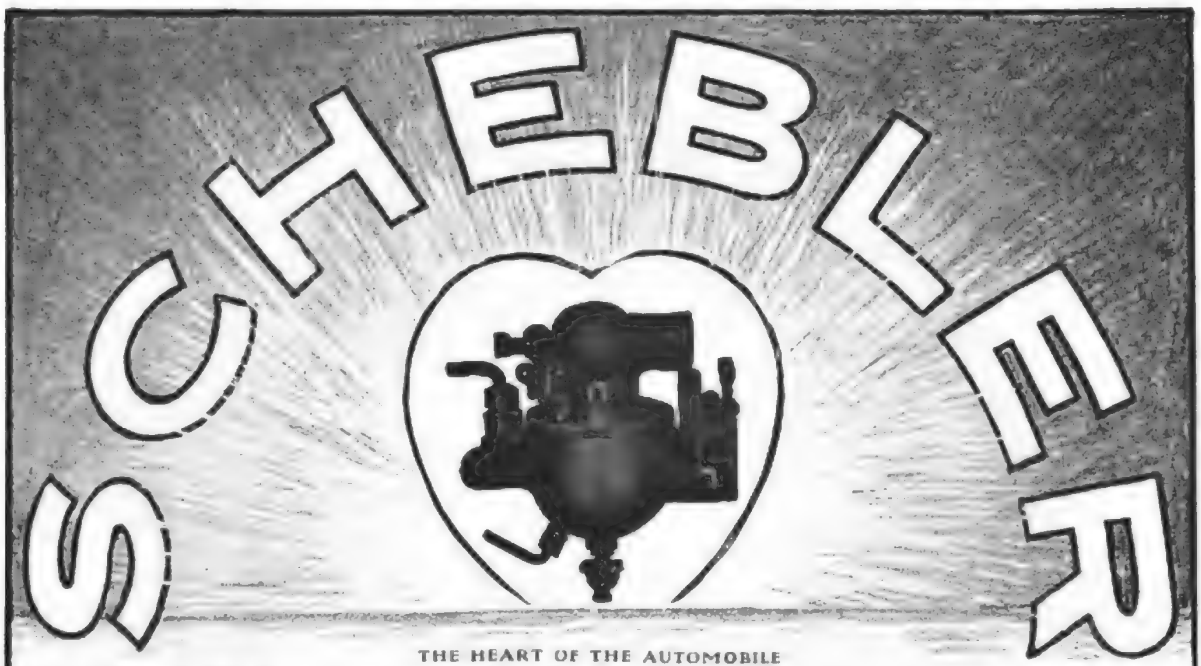
CLEVELAND, O. Member A.L.A.M. **U. S. A.**

CATALOG No. 2 IS READY

We will exhibit in New York at the Madison Square Garden Show ONLY, January 13-20, 1906

Digitized by Google

THE DAWN OF CARBURETOR PERFECTION



THE HEART OF THE AUTOMOBILE

More than 80 of the largest Marine and Automobile Engine builders in the U. S. and Canada are equipping their motors with Schebler Carburetors. They all TESTED them first in competition with the world

WHEELER & SCHEBLER, Mfrs.

INDIANAPOLIS, IND., U. S. A.

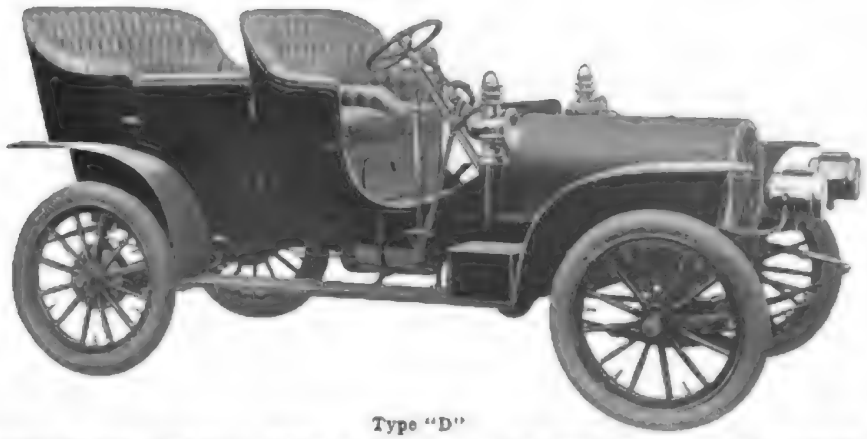
P. J. Dasey, Factory Representative, 431 Wabash Ave., Chicago, Ill.

Agencies in all the Principal Cities of the World

E. J. Edmond.....44th St. and 6th Ave., New York City	F. C. Bowlus.....332 Baronne St., New Orleans, La.
Excelsior Supply Co.....Chicago, Ill.	Consolidated Supply Co.....Denver, Colo.
Automobile Supply Co.....Chicago, Ill.	Chanslor & Lyon Motor Supply Co.....
Beckley-Ralston Co.....Chicago, Ill.	.....503 Golden Gate Ave., San Francisco, Cal.
E. B. Belcher.....20 Green St., Malden, Mass.	Los Angeles Auto Co.....Los Angeles, Cal.
Jos. Brassard.....Central Falls, R. I.	McCulloch & Boswell.....Winnipeg, Man.
Ellsworth Foundry & Machine Shop.....Ellsworth, Me.	Wilson & Co.....Ottawa, Ontario, Can.
National Electric Supply Co.....Washington, D. C.	Canada Cycle & Motor Co.....Toronto Junction, Can.
Smith Electrical Engineering Co.....Watertown, N. Y.	Schuman Carriage Co.....Honolulu, T. H.
The Wallace Bros. Co.....Norfolk, Va.	Turnbull & Jones.....Dunedin, N. Z.
N. Philadelphia Auto Station.....	Geo. Neill & Co.....38 Fenchurch St., London, England
.....3425 N. Broad St., Philadelphia, Pa.	

Digitized by Google

FRANKLIN



Type "D"

FOUR-CYLINDER TOURING CAR. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Four cylinders. Air-cooled. Side doors. 5 passengers. 100 inch wheel base. 1800 pounds. 20 "Franklin horse-power." 45 miles per hour. Full head and tail-light equipment. $2800. f.o.b. Syracuse.

This car is remarkable for its great surplus power, quiet running, easy riding and wide speed range on the throttle. It holds high speed under full load for an indefinite run, and meets full touring requirements as completely as most cars of double its power rating, as far greater weight, and which are vastly more expensive to operate and maintain.

The Carbureter

An automobile's carbureter is something like the human liver.

A car may have great potential merits, but with a sluggish carbureter they cannot develop into action, and you have a mighty sick car.

The wide-awakeness, the always-on-tap energy of Franklin cars is constantly insured by the most accurate, sensitive, positive carbureter ever put into an automobile.

We manufacture it ourselves; as carbureters purchased on the market, many of which give satisfaction on ordinary motors, are not efficient enough for FRANKLIN motors.

The Franklin carbureter is an automatic float-feed type. Gasoline enters from the lower side of carbureter and is strained through wire gauze before entering the float chamber. Dirt and water are collected in a trap, which can be entirely removed or easily cleaned, without disturbing any other part of carbureter.

A by-pass operated by the throttle acts positively when that is opened, and supplies auxiliary air in proper proportions. This by-pass, being mechanically operated, does away with springs, separate air-control and a multiplicity of other parts. All connections are made with ground joint unions.

The Franklin auxiliary exhaust, improved oiler, clutch, brakes and bearings, more convenient levers and better protection of parts, are some of the other details which make 1906 Franklins not only exceptionally powerful but the readiest and liveliest of motor cars.

Type E: Gentlemen's Roadster. The best-built, ablest Runabout in the world.

Type G: The new Light Touring Car.

Type H: The new 6-cylinder top-notch flyer.

Write for the book

We exhibit in New York at Madison Square Garden, January 13-20, 1906

H. H. FRANKLIN MFG. CO., Syracuse, N. Y.

Member Association Licensed Automobile Manufacturers

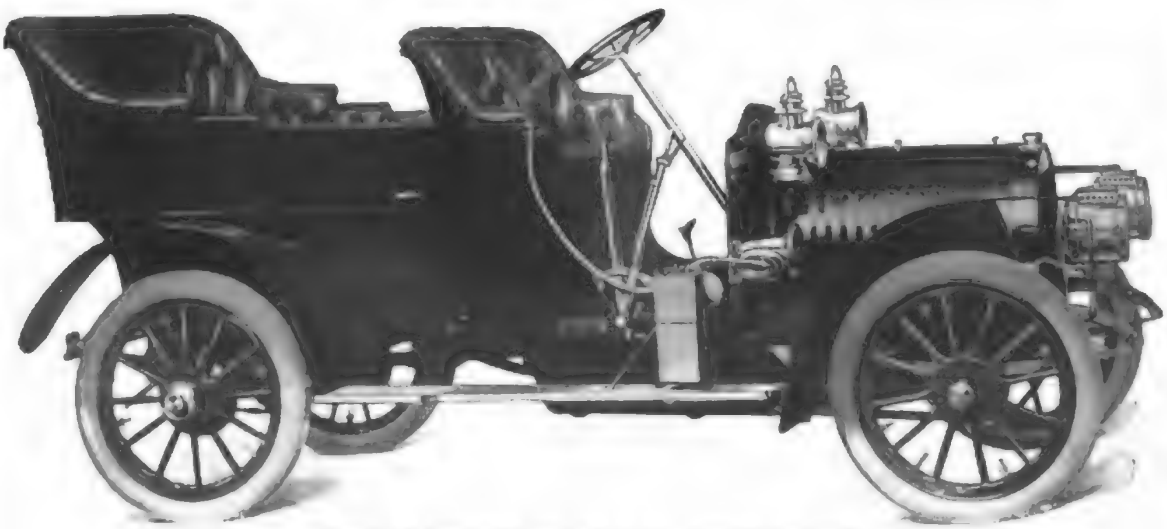
Digitized by Google

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, bevel gear drive. Very large and roomy, full aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Guaranteed free of repairs for one year

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway, Cor. 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wanted in Unassigned Territory

Digitized by Google

If you are looking for the "best" car you can't recognize the ear marks by size, speed, price, quietness, number of cylinders, where they are located, whether the car is gear driven or chain driven, or any such externals. As we said last week and as we want to repeat, the car that is "best" for you is that car which will return you the most fun and enjoyment per dollar expended, and which will fill your mind with the greatest number of pleasant recollections and the fewest unpleasant.

And as we said further, you can't determine which that car is by listening to what the makers and sellers of the various cars have to say in its favor at the beginning of the year, but what those who have purchased it have to say for it or against it at the end of the year.

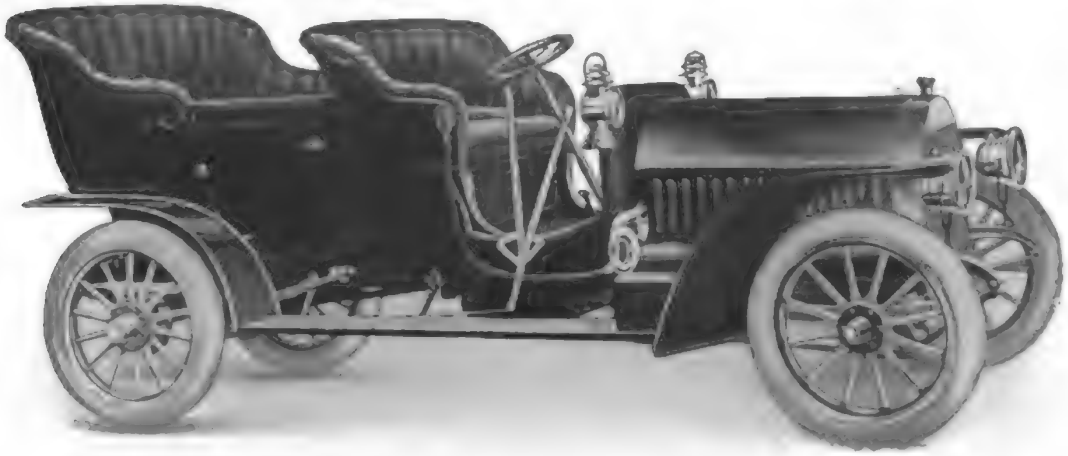
Better read this again and then look up our last week's ad if you have forgotten what we said in it.

J. STEVENS ARMS & TOOL CO.
705 Main Street Chicopee Falls, Mass.
Members A. L. A. M.

Wayne

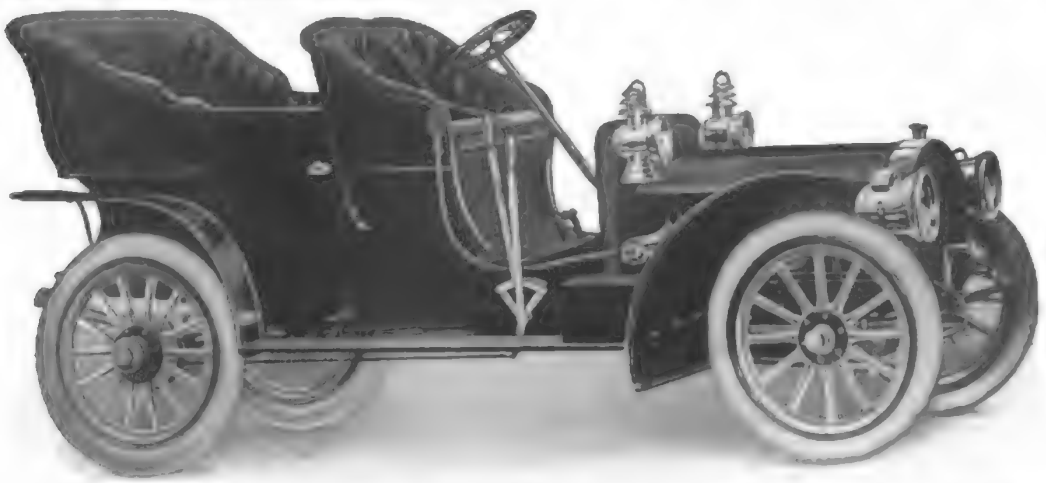
An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



Wayne Model F $3500

MOTOR, 4 cylinder vertical, cylinders 5½ x 5 cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, I beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES, 34 x 4½. EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights with generator, tail lamp and tube horn.



Wayne Model K $2500

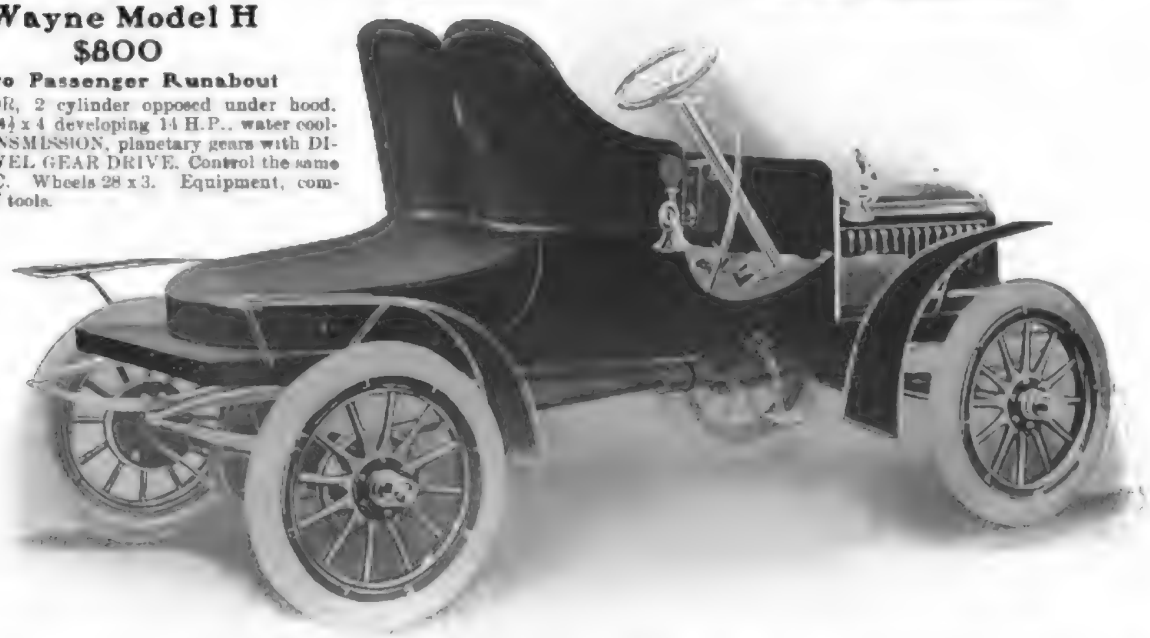
MOTOR, 4 cylinder vertical, cylinders 4¼ x 5 cast in pairs and water cooled. Engine develops by brake test 35 H.P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles same type as Model F. TIRES, 32 x 4. EQUIPMENT, same as Model F.

Digitized by Google

Wayne

Wayne Model H
$800
Two Passenger Runabout

MOTOR, 2 cylinder opposed under hood. Cylinders 4½ x 4 developing 14 H.P., water cooled. TRANSMISSION, planetary gears with DIRECT BEVEL GEAR DRIVE. Control the same as Model C. Wheels 28 x 3. Equipment, complete set of tools.



The strong features of this car are the extreme simplicity and accessibility of the engine and transmission. The crank case and transmission case form one casting and the entire engine can be taken apart or assembled in half an hour.

Wayne Model C
$1250

MOTOR, double opposed of the standard Wayne type, with cylinders 5¼ x 5. Engine is hung under the chassis frame and develops by brake test 20 H. P. *This is the same type of car which Proved so successful last season, brought up to date and with all new improvements.* TRANSMISSION, is of the planetary gear type with chain drive. CONTROL is by a single lever which engages the high speed clutch and reverse. The slow speed and brake are controlled by foot pedals. TIRES 30 x 3½. EQUIPMENT, complete set of tools, side oil lamps, tail lamp and horn.

We want agents to write us about the Wayne Cars for 1906. Agency arrangements can now be made for unoccupied territory. Write while you think about it for full particulars.

Members American Motor Car Manufacturers' Association, Chicago. **Wayne Automobile Co., Detroit, Mich.**

Digitized by Google

MITCHELL

The Ford 4-cylinder Runabout

This car—Model N — is the biggest revelation yet made in automobile construction. A car of this type for less than $500.00 seemed an impossibility, but here it is. 4 cylinders. 15 H. P. Direct drive. Speed 40 miles. 78-inch wheel base. Weight 700 pounds.

Ford Model K

6 cylinders—40 H. P., 4 to 50 miles per hour on high gear. Perfected magneto ignition, mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2000 pounds. **Price $2500.**

NO FURTHER PARTICULARS WILL BE GIVEN UNTIL THESE CARS ARE SHOWN FOR THE FIRST TIME AT THE AUTOMOBILE CLUB OF AMERICA'S SHOW AT THE 69th REGIMENT ARMORY, NEW YORK, JANUARY 13th to 20th.

Deliveries for Models N and K Will Not Be Made Before March

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

Ford Motor Company, Detroit,

Member American Motor Car Man'f's Association, Chicago

BRANCHES: 147-149 151-153 Columbus Ave., Boston; 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Girtonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City. : : : : Canadian Trade Supplied by Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

Digitized by Google

SOLAR LAMPS

THEY CUT LIKE A KNIFE THROUGH THE GLOOM AND DARKNESS

EVERY MAN WHO DRIVES AT NIGHT MUST HAVE A GOOD CAR AND A BETTER LIGHT

LET THE SOLAR LIGHT YOUR WAY

THAT'S THE SOLAR

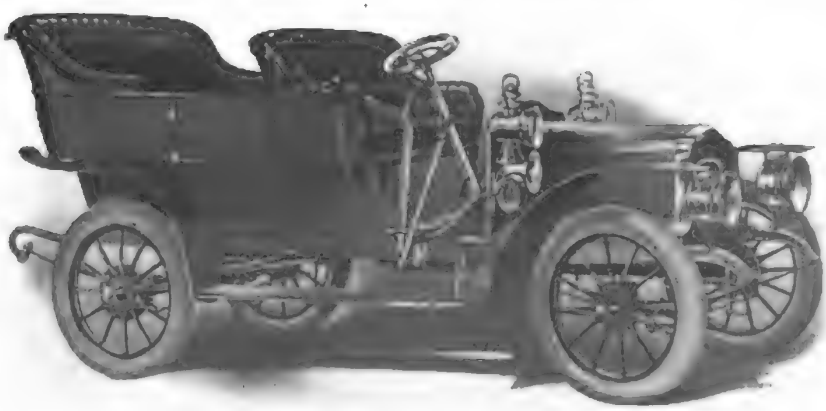
GET OUR BOOKLET OR ASK YOUR SUPPLY MAN

BADGER BRASS MFG. CO.
KENOSHA, WIS.

NEW YORK OFFICE, 11 WARREN ST.

Digitized by Google

Corbin Cars for 1906



Model E. Light Touring Car, 24 h. p. $2,000.

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section, drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs, of special design and great flexibility. Wheels 32x3½ inches. Weight, 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools, constitute the equipment.

Annular Ball Bearings Are Employed Throughout

Certain agency opportunities are still open. Representative dealers are requested to communicate with us to insure early delivery of cars.

Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati
5905 Centre Ave., East End, Pittsburgh 470 Broad St., Newark

Digitized by Google

WALTHAM-ORIENT

WALTHAM-ORIENT, MODEL R, $2250

The Car of Today Must Do More Than Look Its Price. The high-priced, high-powered motor car is all right—it has its place and its purchasers, but the **popular demand** is for a car of moderate price, reasonable speed that will be maintained uphill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of Its Price

Six Models for 1906

Model R, a Swell Special 20 h. p.	$2,250	Model M, 16 h. p. Runabout, **Detachable Tonneau,**	$1,750
Model N, 20 h. p. Tourist	2,000	Model K, 16 h. p. Two-passenger Runabout,	1,600
Model L, 16 h. p. Tourist	1,750	Model BB, 4 h. p. Friction Drive Buckboard,	400

We are alive for live agents. Write for specifications and proposition.

We will exhibit at New York, Chicago and Boston Shows.

WALTHAM MANUFACTURING COMPANY

General Offices and Factory - Waltham, Mass., U. S. A.

Member Association Licensed Automobile Manufacturers.

MODEL B B—FRICTION DRIVE BUCKBOARD
A REMARKABLE MOTOR CAR FOR $400

Digitized by Google

OLDSMOBILE

Standard Runabout Model "B." Price $650

For 1906 we have brought out, in addition to our well-known curved dash runabout (the "you see them wherever you go" kind), a straight dash or "piano box" runabout, which we sell at the same price. This style appeals strongly to a certain class of drivers. It is unique and attractive and possesses all the most desirable features essential to a satisfaction-giving runabout.

It has a simple single cylinder motor, with 7 h. p. It is lever controlled. Starts from the seat; has safety device to prevent all danger of back fire; effective and easily operated brakes, and many attractive and serviceable features, making it up-to-date and desirable in every way—a big value for the money, and essentially a car for business utility.

Use the Catalog Coupon below for further particulars regarding the Standard Runabout, Model "B," price $650; the Palace Touring Car, four-cylinder, Model "S," price $2,250; two-cycle Model "L," price $1,250, or any of our commercial vehicles.

Our New Models will be on Exhibition at Madison Square Garden Automobile Show, January 13-20, 1906

OLDS MOTOR WORKS, Member A. L. A. M. Lansing, Mich., U. S. A.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Kindly send me information regarding cars checked, n interested.

del B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

me _____

dress _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. 13

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. 13

Name _____

Address _____

Digitized by Google

WE GATHER from the good opinions expressed by many highly pleased owners of **The Lozier Motor Car** that its "smooth running, ease of control and all-around reliability," covers about everything that is to be desired in a High-grade Motor Car. The item of low maintenance cost and all that it implies, was correctly calculated in its design, and is fully guaranteed in its perfect construction. Among the notably distinctive features that are embodied in

The Lozier Motor Car

may be mentioned—the use of Hess-Bright ball bearings in sliding gear, change speed and differential gears. Weldless nickel-steel drop-forged I-Beam axles of heavy construction—FRONT AXLE AND STEERING KNUCKLE IN ONE PIECE. Ball-bearing wheels of large diameter (36 inches). Platform spring suspension. Solid forged motor crank-shaft (arms being webbed out instead of drop-forged)—turned, hardened and ground on its own centers. Transmission and differential shafts and flexible shaft with universal joint of nickel-steel. Babbitted bronze motor bearings. Long wheel-base, 115½ inches.

1906 MODEL. TYPE C. 55 HORSEPOWER

Limousines, Landaulets and Touring Cars now delivering. Prices $4,500 to $5,500.

The Lozier Motor Company

1 BROADWAY, NEW YORK CITY

[Cars now showing at R. M. Stivers' Carriage Rooms, 19 W. 62d St.
After January 1st, at our New Building, 55th Street and Broadway]

Digitized by Google

ELMORE
ANNOUNCEMENT

During the New York and Chicago Automobile Shows, 1905, we were approached by hundreds of automobile owners, saying, "If you people would only put out a four cylinder 2-cycle car, you would simply have the rest beat out of sight. It would be practically the same as an eight cylinder of the four cycle type with about one-fourth the complication, and as steady running as a clock." Well, we have built the four cylinder and it is all you expected, and more. You may have already heard this from persons who have seen and ridden in it, but you have never heard us say so. We, therefore, take this occasion to announce that it is our firm conviction that not only have we exceeded the most sanguine expectations of our friends, but that in all essential points we have the best four cylinder car ever built.

Our two cylinder 2-cycle car is a worthy successor to our Model 11, which, for reliability, as is well known, has never been excelled. It is in the details of construction that we have made our great advance and in changing from chain to shaft drive we accede to the popular demand for a two cylinder car of that type. Among the details we have improved is in using a new planetary gear running in oil, a popular make of circuit breaker, heads cast solid with cylinder, and on both cars we use the famous Hill Precision Oiler. But, as said above, there are so many things we want to talk to you about that we hope you will at once get into communication with us.

We have made so many improvements on our 1906 Models that we have not the space to speak of them here, but our literature will explain them all in such a manner that you will readily see we have a car with the exact features that have been talked of for years as being most desirable, but are impractical on any four cycle car on account of complication, rhythm of motion, power, etc., but which come perfectly natural to our 2-cycle. The action and power of an eight cylinder car with one-fourth the complication does it all.

Ask for literature.

NOTE—Will exhibit in New York City at Madison Square Garden ONLY, Auto Show Jan. 13 to 20

Elmore Manufacturing Company
Clyde, Ohio

Members of Association of Licensed Automobile Manufacturers

Digitized by Google

WAY'S MUFFLER

PAT. NOV. 16 and 30, 1897

WHICH WAY DO YOU WANT IT?

An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct.

THIS IS THE WAY YOU WANT IT

Either Protect Your Throat

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

WAY'S Muffler

is a perfect throat and chest protector.
Comes with or without ear tabs as preferred.
Especially adaptable for winter motoring.
As easy to put on as your hat.

The Way Muffler Co.

MANUFACTURERS

Cor. 23d and Arch Streets, PHILADELPHIA, PA. J. HOWARD WAY, Prop.

Chicago, 920 Medinah Temple
Pittsburg, 9th and Liberty Sts.
New York, 43 Leonard St.
Cincinnati, 21 W. 3rd St.
London, Canada, Hiscox Bldg.

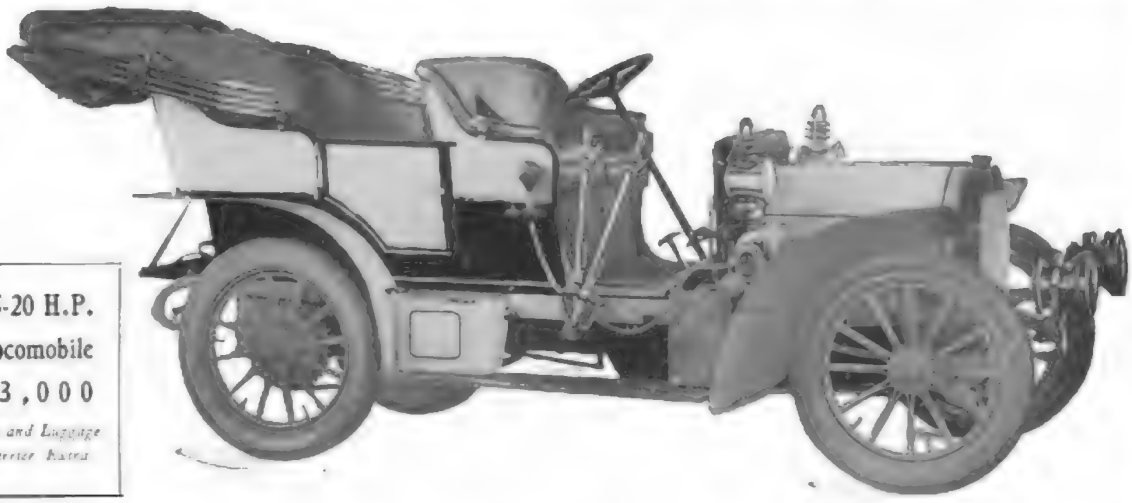
Motor Age

Digitized by Google

Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., $3,000, 30-35 H. P., $5,000, both with complete touring equipment



15-20 H.P.
Locomobile
$3,000
Top and Luggage Carrier Extra

TYPE "E" Locomobile 15-20 H. P.

PRICE—$3,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—32x4 inches on all four wheels.
WHEEL BASE—93 inches.
CONTROL—Gas and spark levers on steering wheel.

TYPE "H" Locomobile 30-35 H.P.

PRICE—$5,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Is placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—34x4½ inches.
WHEEL BASE—106 inches.
CONTROL—Spark and gas levers on steering wheel.

The Locomobile Company of America, Bridgeport, Conn.

NEW YORK, 76th St. and Broadway.
PHILADELPHIA, 240 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St.
CHICAGO, 1254 Michigan Ave.

Digitized by Google

You Must Take a Ride

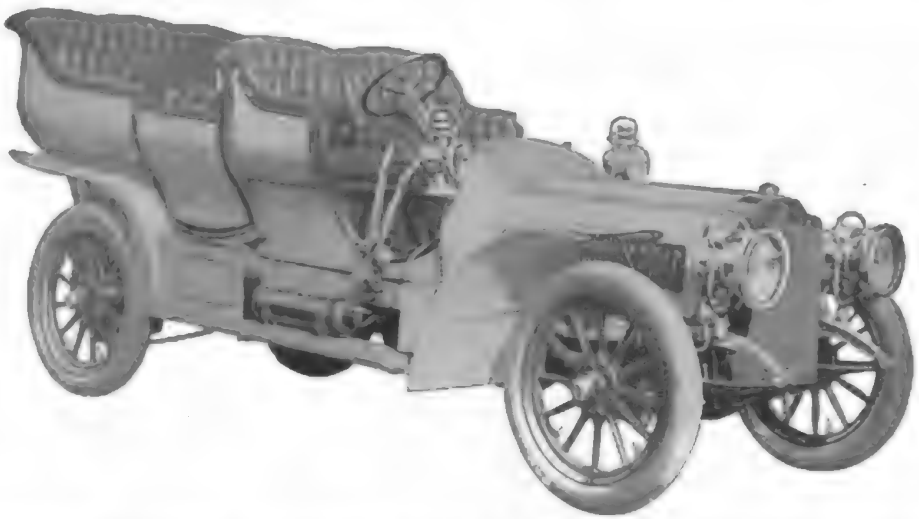
in the

50 HORSE-POWER

THOMAS FLYER

to fully understand and appreciate its powerful construction, perfect mechanical parts and excellent finish.

Price
$3500
F. O. B.
Buffalo



Members
Association
Licensed
Automobile
Manufacturers

As a result of three years of constant study, ambitious determination and hard work, we have in the new Thomas more fine bearings, more improved devices, proving power, safety, comfort and durability than any automobile made at home or abroad.

"Every Stock Thomas Car guaranteed to show sixty miles an hour before leaving the factory."

All we ask is an opportunity to show you and every man that we can prove the statement—

"The Nearest Approach to Automobile Perfection"

E. R. THOMAS MOTOR CO.

1417 Niagara St., BUFFALO, N. Y.

Largest Manufacturers of 50 Horse-Power Cars in the World

Digitized by Google

THE MARION

The New "Model Five"

This car is not an experiment. A number of them have been in commission since August last. It successfully meets the demand for a Touring Car

That is high-powered;
That is moderate in price;
That is as fast as the speediest;
That is roomy and luxurious (seats five);
That is so simple as to enable a novice to take care of it;
That is so strongly built as to cut out the repair bills;
That is so easily handled a woman can drive it at high speed;
That is so light and flexible as to make tire trouble a rare experience.

These problems have been intelligently and thoroughly worked out. Its four cylinders develop 28 horsepower and do it silently. The most efficient and noiseless chain drive yet devised delivers this power—all of it—directly to the spokes, without recourse to any roundabout transmission through rear axle or hubs. Total weight, 2,100 lbs. This combination of high power and light weight tells its story of speed and "get there" through any kind of country that has wagon tracks.

FEW AND SIMPLE PARTS

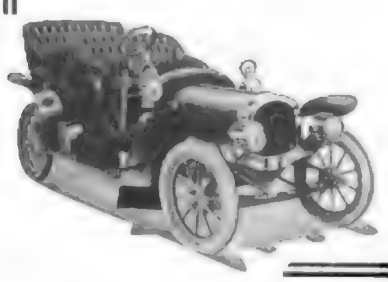
CLEAN COMPACT CHASSIS

Extreme simplicity marks every feature of the mechanism, while liberal dimensions, high-class material and accurate workmanship of every part that bears strain enable it to stand up to the roughest kind of work without damage. Multiple disc clutch and sliding gear transmission, with three speeds forward and reverse.

Two sets of powerful brakes, simple and sure steering apparatus and instantaneous responsiveness of the engines to speed regulation makes the control certain and easy.

Automatic lubricating system that is efficient, reliable and economical.

Many excellent and exclusive features. Ask to be shown and we'll send our nearest agent with a car. Seeing and riding will convince.



FOUR CYLINDERS AIR COOLED

Model Five	28 H. P. Touring Car	$2,500
Model Two	16 H. P. Touring Car	$1,500
Model Four	16 H. P. Physician's Runabout	$1,250

Look us up at the New York and Chicago Shows.

We have a few attractive agency opportunities still open.

MARION MOTOR CAR COMPANY INDIANAPOLIS INDIANA

Digitized by Google

The Queen

$2000

One of Our Three New Models

MOTOR—[illegible] Cylinder—[illegible] H.P.
DRIVE—Chain direct to rear.
FRAME—Armor plate.
WHEELS—[illegible]
WHEEL BASE—[illegible] inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Drop forged.
REAR AXLE—Full floating. Drop forged.
BRAKES—Double internal. Expanding. Acting on Rear Hubs.
BODY—Tonneau. Fitted with Top, Curtains, Glass Front, Foot Rail, Lamps, Horn, Tools and Storage Battery.

[illegible] Cylinder Touring Car with Detachable Tire [illegible] at $1,250—and a Limousine [illegible] at $800.

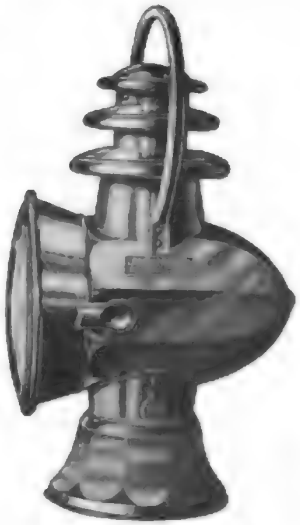
Write us for complete details and agency proposition.

E. R. THOMAS MOTOR CO., Detroit, Mich.

[illegible] Chicago Branch.

Digitized by Google

One of Mfg. Latest



Atwood Co.'s Models

Design Patent Applied For

Very rich and exclusive. The **highest grade** oil lamp ever produced by any manufacturer. In a class by itself, because there is no other oil lamp today that can anywhere approach it.

We were not satisfied with merely producing a lamp that would **burn,** also would **not smoke,** and that would **stay lighted,** that was **strong** and **finely finished,** important as these all are, it must have some **style** about it. A smart look! When you get an Atwood Lamp you get **all** of these requisites.

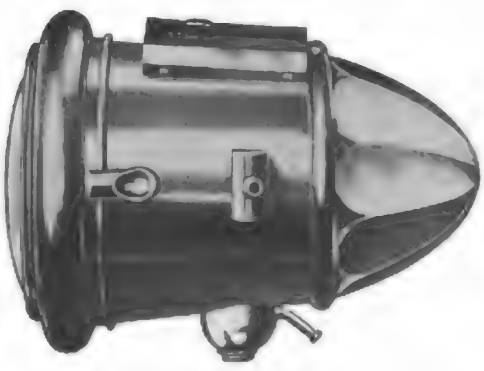
MORAL

It is not necessary for a lamp to be unattractive and crude in order to be good.

New Paraholens Headlight

Two Models of Gas Head Lights

Our new Lamp Factory is the largest and most complete in the United States.



No. 12. Gas Headlight

ATWOOD MFG. CO., Amesbury, Massachusetts

Digitized by Google

E. P BLAKE CO

Jackson Automobile Co.:

Jackson, Mich.

Gentlemen -

P. S. The tires on this car are Diamond detachable. The two forward rims have never been touched and the two rear tires have been reversed once. This car is owned and driven by Mr. E. E. Bates, Brockton, Mass.

THE accompanying letter and picture explain WHY every agent we had on our list for 1905 has contracted for Jacksons for 1906; ¶ *Why* every "Jackson" driver is an advertisement; ¶ *Why* you, if you have the auto fever, should buy the Jackson; ¶ *Why* the Jackson has the world's record for five miles on a circular track for two-cylinder cars; ¶ *Why* the Jackson won second in the non-stop run from Chicago to St. Paul.

THREE MODELS:

MODEL "C" $1250.00, 20-24 H. P.
MODEL "D" $1500.00, 20-24 H. P.
MODEL "G" $2500.00, 40-45 H. P.

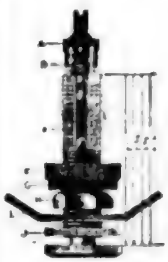
OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.
L. C. Howard, 1655 Broadway, N. Y.
Ormond Auto Co., Brooklyn, N. Y.
E. P. Blake Co., Boston, Mass. New England distributors.
East Liberty Auto Co., Pittsburg, Pa., 5069 Centre Ave.
Diamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.
E. K. Hauser, 1233 New York Ave., Washington, D. C.
C. R. Dench, Erie, Pa.
Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.
Parson Motor Car Co., Cleveland, O.
Hagmann & Hammerly, Chicago, Ill.
Seidler-Miner Auto Co., Detroit, Mich.
The Jackson Auto Co., 3685 Olive St., St. Louis, Mo.
Chas. R. Johnson, Coldwater, Mich.
Chas. T. Bisch, Springfield, Ill.
The Motor Car Co., Minneapolis, Minn.
Sioux Falls Auto & Supply Co., Sioux Falls, S. D.
The David Bradley Co. of Wisconsin, Fond du Lac, Wis.

JACKSON AUTOMOBILE CO., :: Jackson, Mich.

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1898



SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires; our No. 777 Valve being the standard for 2 1-2 inch and 3 inch tires, and our No. 725 Motor Valve being the standard for all tires larger than 3 inch.

SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

A. SCHRADER'S SON, Inc., 28-30-32 Rose Street, New York

Digitized by Google

It Isn't Always Winter

And when sunny days once more, more fully the bright are with us then you can appreciate

CRAWFORD
1906
Touring Car
$2,000

The Joys of Motoring

in a Five-Passenger

CRAWFORD

OUR NEW MODEL IS OUT

Here are the Specifications:

MOTOR: Four-cylinder, upright, water-cooled, 4½ by 4½ individual cylinders. 24-28 Horsepower.
CRANK SHAFT: Four throw, bearing in five bronze bushings aggregating 14½ inches.
CRANK CASE: Removable without disturbing adjustments.
WHEEL BASE: 100 inches; tread 56 inches.
WHEELS: 34-inch, wood, artillery type, on large ball bearings.
TIRES: Optional; regular clincher or mechanically attached.
DRIVE: Double chain on generous-sized sprockets.
TRANSMISSION: Selective sliding gear set, three forward speeds, one lever control, ball bearings.
BEARINGS: Ball bearings throughout.
BRAKES: Two powerful brakes on rear hub, with set lever. Two band brakes operated by foot on cross shafts.
LUBRICATION: Force feed lubricator.
FRAME: Deep section pressed steel sides, with an angle iron sub frame brazed up to carry motor and transmission, which are connected by double universal joint.
CLUTCH: Of inverted type, made dust-proof by leather diaphragm and operated by foot lever.
IGNITION: Jump spark, with four coils on dash.
CONTROL: Throttle and spark.
SPEED: 36 miles, approximate maximum.
WEIGHT: 2100 lbs.
TANK CAPACITY: 14 gallons.
STEERING GEAR: Wheel and pinion.
AXLES: Large sized tubing.

SEE US
at the
A. C. A. SHOW
in 69th Reg. Armory
NEW YORK

Crawford Automobile Co.
HAGERSTOWN, MD.

CADILLAC UTILITY

The single-cylinder Cadillac
will climb any hill that any automobile will climb.

The single-cylinder Cadillac
will travel as fast as anybody ought to ride.

The single-cylinder Cadillac
will travel any road that any automobile will travel.

The single-cylinder Cadillac
Costs less to operate
Costs less to maintain
Requires less attention
than any automobile we know of.

Because so many people know these, and some other things, probably accounts for the fact that more Cadillacs were sold during 1905 than any two other makes combined and won for them the unquestioned distinction of

America's Leading Motor Cars

WE WILL EXHIBIT IN NEW YORK AT MADISON SQUARE GARDEN ONLY, JAN. 13-20, 1906

CADILLAC MOTOR CAR COMPANY

DETROIT, MICHIGAN

Member Association Licensed Automobile Manufacturers.

Digitized by Google

Haynes

Exclusive Features that Appeal to Discriminating Buyers

Model "R" Four-Cylinder Touring Car

Roller bearing vertical engines. Cylinders 5¼"x5"; 50 H. P. Cast separately. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carbureter which assures perfect mixture in all temperatures and under all climatic conditions. Master clutch that has no leather surfaces to wear. Takes hold easily and gradually without jerking. Shaft drive. Exclusive universal joints that do away with wear on pins run in housing packed with grease. One piece nickel steel rear axle with beveled sprocket gear driven by roller pinion; thrust eliminated; friction reduced; noiseless; all in a bath of oil. Roller bearings throughout. 108 inch wheel base. 50 inch tonneau with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f. o. b. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906—HAYNES—roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10 per cent loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of preëminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears the transmission device never allows the momentum of the fast moving car to be thrown against the power of the engine, with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Gray curled hair and hand-buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are SOME reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue Number 12, sent prepaid upon request.

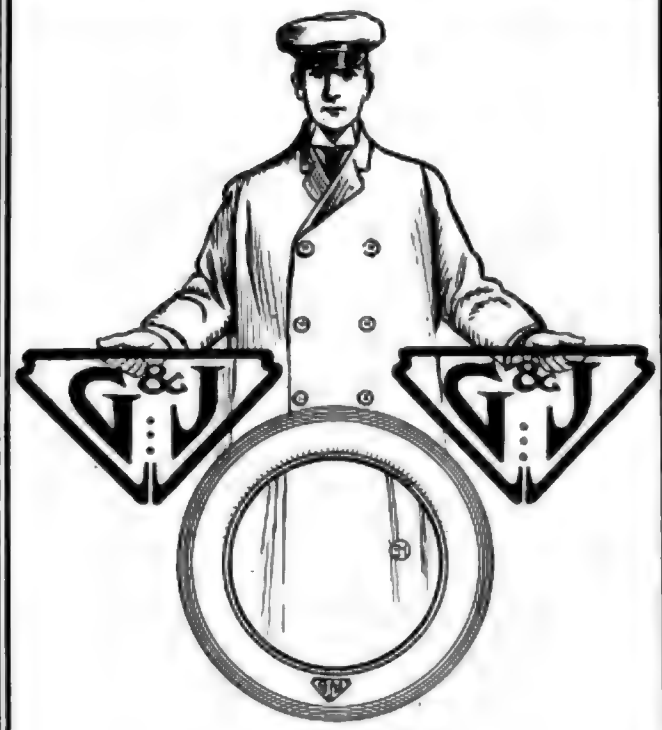
"The Car that the Repairman Seldom Sees"

The Haynes Automobile Co.

KOKOMO, INDIANA

CHICAGO: 1421 Michigan Ave. NEW YORK: 1715 Broadway

Members A. L. A. M.



G&J TIRES

For the

SEASON OF 1906

OPEN STEAM CURED
STRONG AND TOUGH
MOST DURABLE—
HIGHLY RESILIENT

The Best Tire Made For Automobile Use

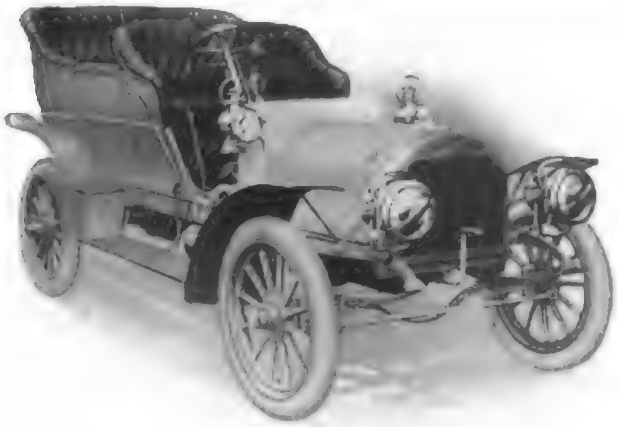
Write us

G&J TIRE CO.

INDIANAPOLIS

Boston Buffalo Cleveland Detroit
Chicago Denver San Francisco

Digitized by Google



Again—"As good as it looks"

THE PARLOR CAR OF MOTOR CARS

Stoddard-Dayton

Talk of luxury! The roomiest of seats—splendid cushions that take you into their generous depths and make you forget there was ever an angle to ache mortal spine.

Well, that is the kind of rich comfort you find in the STODDARD-DAYTON Touring Car.

But there's more than fine upholstering to contribute to your ease.

The STODDARD-DAYTON has every **practical** modern device that takes up jar and reduces vibration. The springs are single elliptic—40-inch front, 50-inch rear, made from best crucible analysis steel. There are roller bearings throughout. Mechanical lubrication keeps all working parts swimming.

The STODDARD-DAYTON Model-D—5-passenger Touring Car has a special type of 4½x5-in. 4 cylinder motor; water-cooled; frame of hot-rolled, high carbon, pressed steel, sliding gear transmission, three speeds and reverse—selective type, speeds can be changed instantly without clashing or friction; practically noiseless; entire transmission on roller bearings; mechanical lubrication; 30 to 35 horsepower. Proportion of power to weight, one horsepower to every sixty pounds. $2250. Immediate delivery.

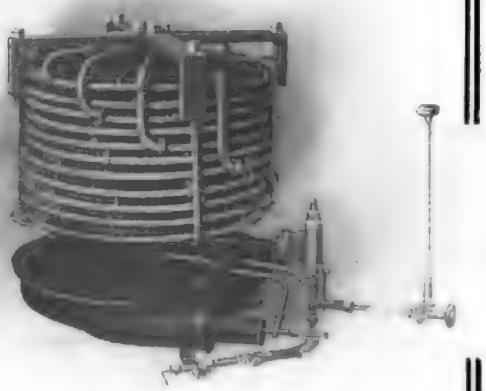
Write for our 1906-book. Interesting to any one who owns a car or intends to own one.

THE DAYTON MOTOR CAR CO. Dayton Ohio

Agencies in the following cities: McDuffee Automobile Co., 1442 Michigan Ave., Chicago; Stoddard-Dayton Agency, 1853 Broadway, New York; Hamilton Automobile Co., 206 North Broad, Philadelphia; Central Automobile Co., 5989 Centre Ave., Pittsburg; J. A. Cramer, 737 Main St., Buffalo; Randliff Motor Car Co., 24 Columbus Ave., Boston; Colonial Automobile Co., 3944 Olive St., St. Louis; Dericht Automobile Co., Omaha; H. S. Moore, 160 Crawford Road, Cleveland; Automobile & Supply Co., 24 Temperance Street, Toronto; Norman W. Church, Hellman Bldg., Los Angeles, Cal.; Haynes Automobile Co., 220 South 6th Street, Minneapolis; C. M. Wood, Denver; Fisher Automobile Co., 330 North Illinois Street, Indianapolis.

The Incomparable WHITE

The Car for Service



WHITE GENERATOR

Above is illustrated the generator of the White steam car, together with burner, vaporizer, pilot-light and gasolene connections. A glance is sufficient to show that the White generator is totally unlike any other boiler ever designed. We might point out how wide this difference is by calling attention to the fact that in the White generator the water is at the top and the steam at the bottom. In every other type of steam-making apparatus, water is at the bottom and steam at the top.

If the coils of the White generator should be unwound and straightened out the generator would be seen to consist of a single long piece of steel piping. Could anything simpler than this be conceived? The capacity of the tubes is comparatively small; i. e., the amount of water and steam contained therein at any one time is small. The tubes will safely withstand a pressure of many times that which it is possible for the steam to attain. Could any safer arrangement be imagined?

As regards the superior reliability of the White system, that is a matter which has been amply demonstrated by the continuous victories and notable achievements of six successive models of "The Car for Service."

WHITE SEWING MACHINE COMPANY

Cleveland, O.

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Premier

"The Quality Car"

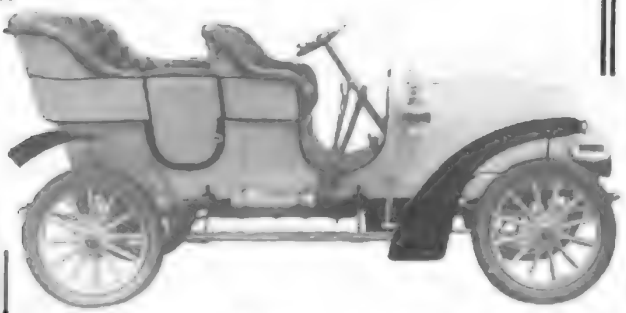
(Air-Cooled)

Conspicuous in Automobile Construction

by virtue of its beautiful design, great power, speed, ease of carriage, simplicity of manipulation and accessibility. It embraces a 20-24 H. P. four-cylinder vertical motor, 4¼x4¼ in. bore and stroke, bevel gear shaft, drive, three speeds forward and reverse, Premier sliding gear transmission (mounted on five Hess-Bright type ball bearings), pressed steel frame, I beam front axle, 32 in. wheels, 4 in. Clincher tires, 106 in. wheel base, beautiful cast aluminum curved dash, sight feed precision oiler, cast aluminum hood front and fan, luxurious upholstering, rear seat 40 in. (measure the other cars), irreversible steering gear. Full gas and oil lamp equipment and generator, horn, and *brakes that hold*—altogether comprising a car which has no superior in point of merit and luxury. Price, $2,000.00 f. o. b. Indianapolis.

Model L De Luxe, $2,250.00.

Write for catalogue and booklet (P) of Road Experiences.



Premier Motor Mfg. Co.

INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association

An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. **All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new.** His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with **Goodrich Tires, 3x30 inches.** I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

THE BAILEY "WON'T SLIP" TIRE. Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

The B. F. Goodrich Co.

AKRON, OHIO

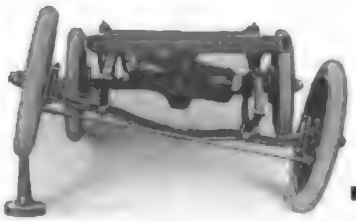
New York, 66-68 Reade St. and 1625 Broadway
Buffalo, 731 Main St. — Cleveland, 416 Erie St.
San Francisco, 392 Mission St. — Chicago, 141 Lake St.
Boston, 181 Columbus Ave. — Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St. — Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.

Digitized by Google

THE MARMON

"A Mechanical Masterpiece"

Front Wheel Raised Over A Foot



Body Level

Rough Road Reasons

The purpose of this picture is not to show that the Marmon can be photographed on a rough road, but to show why the Marmon can be run at good speed over rough roads without incurring the ruinous strain on the mechanism and the vicious jolting to the passengers which is inevitable in **any other car.**

In all other automobiles the power plant is attached to the body frame and the body frame is suspended at four points on the axles. Except for the springs and tires, this construction would enjoy no advantage over that of a log wagon. But in an automobile, weight must be considered, and its costly mechanism must be protected. This unnatural and unyielding construction means ruinous binding and twisting strains in some part of the mechanism all the time. The rougher the road, the worse the strain.

The elasticity of the Marmon is such that no matter how rough the road, the mechanism is free from such strains and its passengers enjoy the very luxury of motion.

This elasticity is supplemented by springs, but is **primarily** due to an exclusive **patented** Marmon feature

Double Three-Point Suspension

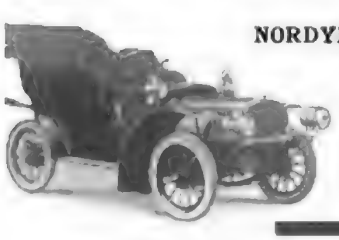
Cast aluminum body on one frame, power plant on another frame, **each frame** suspended on three **pivotal** points. No matter how these frames are tilted, the power plant, straight and rigid driving shaft and rear axle are maintained in alignment. This means perfect power transmission, means fewer parts, simpler parts and less wear on all parts, tires included.

The Marmon oiling system gives no trouble, has no uncertainties. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and **piston pin** bearings. Has no adjustments. All parts oil-tight and dust-proof. One gallon of oil runs the Marmon from 600 to 1,000 miles.

These and other superior features are fully described in Booklet No. 1. Yours for the asking.

We shall demonstrate at the Armory Show, New York.

Four Cylinders Air Cooled { Model C, Four Passenger, $2,500 / Model D, Five Passenger, 3,000



NORDYKE & MARMON CO.

Established 1851

Indianapolis, Ind.

Members American Motor Car Manufacturers' Association

1906 Announcement 1906

The 1906

Hartford Dunlop

and

Hartford Clincher Tires

will be of entirely new construction. Both types will fit our

Hartford Universal Rim

upon which can be placed all makes of Standard Clincher Tires.

The Hartford Rubber Works Company

Hartford ... Conn.

Digitized by Google

Scratch Your Head

for a moment over this:

"The total light falling on a reflector from its focus is proportional to the square of the maximum angle subtended by the rays."

Fig. 1 is a section of the Rushmore lens mirror, whose focal length AB is one-half its effective face diameter. Note the width of the angle CBD—about 120 degrees.

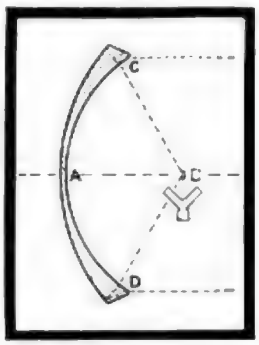


FIG. 1

Fig. 2 is a good specimen of "mirror lens" such as you will find in lamps made to imitate the Rushmore. It is flatter, because that costs less, and its focal length ab is correspondingly greater.

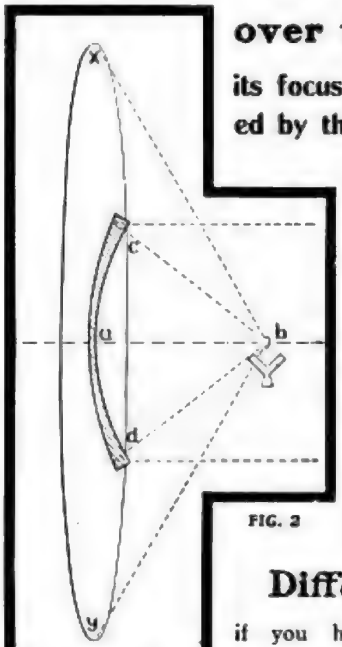


FIG. 2

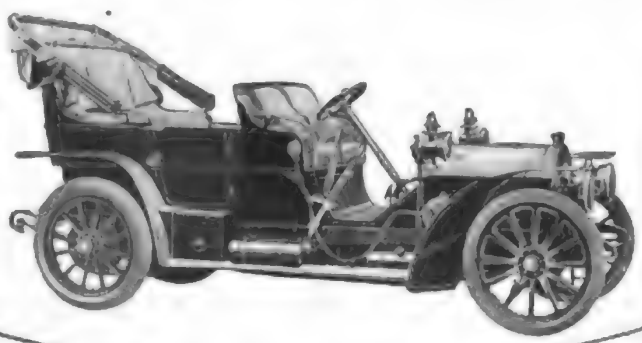
It is better than a plated reflector, certainly, because it stays bright—but compare the angle cbd with the Rushmore angle xby.

The Rushmore lens mirror gets all the light that would fall on the circle XY at the distance ab.

Whew! What a Difference!

How much more light would you be getting if you had Rushmore lamps?

RUSHMORE DYNAMO WORKS .. Plainfield, N. J.



American Mercedes

IF YOU WANT A MERCEDES

Buy it Here and Save the Duty

All the speed, all the strength, all the lightness and all the beauty of the imported 1906 Mercedes are repeated in the 1906 American Mercedes.

Every working part in the one has its counterpart in the other. No test of endurance that can be applied to these two cars will bring out a difference between them. Every patent, every device, every method of construction used by the Daimler Motoren Gesellschaft in building the Mercedes is used by us in building the American Mercedes.

We have the sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company.

Through the rights granted us by our parent Company, the Daimler Motoren Gesellschaft, we have during the past year convinced the most prejudiced and skeptical buyers of foreign automobiles that the American Mercedes is the equal in every respect of its counterpart, the imported Mercedes.

There is only one difference — you save the duty.

The 1906 American Mercedes will be exhibited at the Automobile Show.

DAIMLER MANUFACTURING CO.,

N. Y. City Garage, 10 West 60th St. 973 Steinway Ave., LONG ISLAND CITY, N. Y.

Digitized by Google

Did You Ever

try to force your gas generator a bit, only to see the lamps grow dim and dimmer, and still more dim, till you could have run into a stone wall before you saw it? And did you find, when you got through, a savory mess of baked yellow lime in the carbide cup, that had to be dug out with a chisel and language that wouldn't look well in print? And were your burner tips clogged with tar that defied your ingenuity to get rid of it?

Not once, but dozens of times, probably!

All part of the game, you say?

Not if you had a Rushmore Generator!

It is *the one* portable generator that can be forced *ad lib.* without overheating and without making tar instead of gas.

It is *the one* portable generator whose mode of action will bear scientific discussion.

We want to tell you more about it. Write us.

Rushmore Dynamo Works

Plainfield, N. J.

PENNSYLVANIA CLINCHER

"No car is faster than its tires."

"Tire troubles place a fast car in a class with the farm wagon."

PENNSYLVANIA RUBBER CO.
JEANNETTE, PA.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

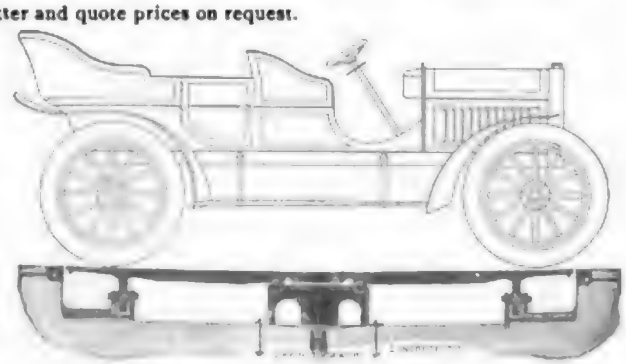
It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.

Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

1906 Models Ready for Delivery

THE LAMBERT

The Famous Friction Drive Car

It will pay you to investigate the Lambert for two reasons:
1st. Simplicity of Construction 2d. Cost of maintenance

NO COMPLICATED PARTS

We are booking orders on the following models:

Model 8. 34 H. P. Heavy Touring Car.	
Model 7. 34 H. P. Touring Car	$2,000
Model 6. 18 H. P. Touring Car	$1,500
Model 5. 16 H. P. Touring Car	$1,200
Model 4. 16 H. P. Light Touring Car	$1,050
Model A. 16 H. P. Runabout	$900

Model 7. 34 H. P. Price, $2,000

A Gearless Transmission

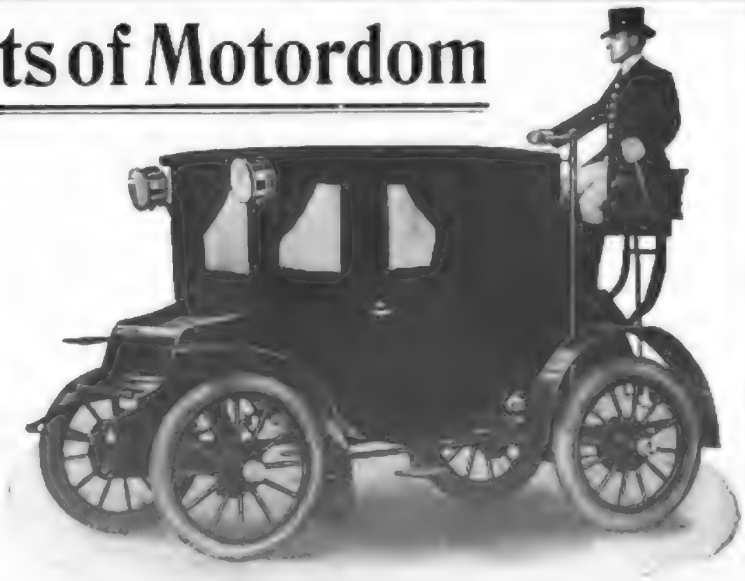
This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau.
Write for descriptive matter on the above models.

THE BUCKEYE MANUFACTURING CO., Anderson, Indiana

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google

The Aristocrats of Motordom



comprise a line of vehicles made up of Imperials, Stanhopes, Surreys, Depot Carriages, Station Wagons and Broughams.
(interior and exterior driven)

THE BAKER BROUGHAM was designed to meet the demand for a high grade vehicle seating four, with seat for chauffeur and footman.

It is lighter by several hundred pounds than any similar vehicle, yet its combination of perfect mechanical construction and the best materials throughout renders it extremely strong and durable.

THE BAKER BROUGHAM i correct in every appointment and meets the requirements of the most fastidious. Its finish and upholstery are superb in every detail. It has an abundance of speed and power, while its simplicity of operation and ease of control furnish to its owner a certain degree of safety that is most gratifying.

BAKER agencies in the principle cities. Write for catalog.

The Baker Motor Vehicle Co.

24 JESSIE ST., CLEVELAND, OHIO

POPE AUTOMOBILES

POPE Waverley ELECTRICS

Profit to the Dealer

The sales of Pope Waverley Electrics last year increased 60 per cent. over the year before; and the past three months have increased 60 per cent. again over that. We are not the only ones who have increased sales, and we are glad, because it shows that the ELECTRIC is being appreciated by the public and by some AGENTS. Are you among those agents who sell gasoline cars only? If so, you are neglecting the most profitable part of your business. Many of our agents have told us, that, had it not been for the ELECTRIC part of their business this year, they would have lost money. The ELECTRIC is an all-the-year-round carriage. Its sales are almost as great in fall and winter as in the spring and summer. Are you neglecting a chance to make money at this season of the year? What you can make now is all velvet. We exhibit in New York at Madison Square Garden only.

Waverley Dept., POPE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

New York City: 1733 Broadway Washington, D. C.: 819 Fourteenth St.
Boston, Mass.: 223 Columbus Ave. San Francisco, Cal.: 451 Mission St.

Digitized by Google

Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get *next* time?"

For a rim-cut tire is pretty near its finish.

And the chances are ten to one that if you are forced to ride around the block on a deflated ordinary tire with ordinary rims your tire will be rim cut before you get there. Because ordinary rims are just like a dull jack-knife. Now if you wished to cut a strap with that dull knife, and the strap was held like Fig. 1 you couldn't do it, because your strength would not be great enough. But if you take the strap like Fig. 2, with a little sawing you can cut it. That's exactly the way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim to cut the tire. But just as soon as it gets partly deflated or flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

Fig. 1

Fig. 2

Fig. 3

Fig. 4

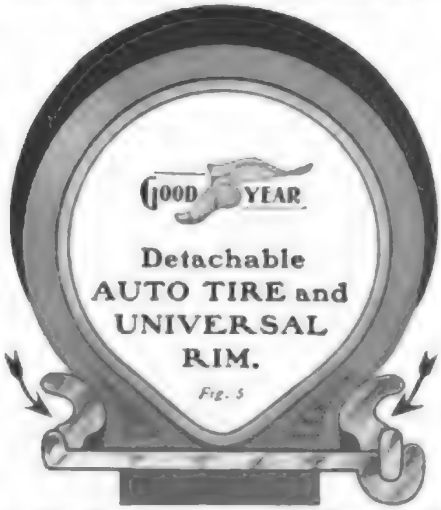


Fig. 5

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.

Fig. 6

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.

Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims *absolutely flat* for **25 miles** on rough roads without serious injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, Akron, Ohio.

Branches in following cities: Boston, 6 Merrimac St.; New York, 258 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Cleveland, 69 Frankfort St.; Philadelphia, 1221 Spring St.; San Francisco, Geo. P. Moore & Co., 506 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

We furnish ALL SIZES of Tires with BAILEY TREADS, if desired

On the Ormond-Daytona Beach, Florida, January 22d to 27th, 1906

The Annual Aristocrat of Race Meets Where Speed Kings are Crowned

Plan a brief vacation .... Escape cold weather for a few days by a trip to balmy Florida .... You will see nature's finest automobile speedway .... Why not take your car with you? .... For all particulars as to Railroad, Steamship, Hotel Accommodations, Programs of Meet, etc.,

Address ... W. J. MORGAN, Gen'l Manager, 116 Nassau Street, New York

Representing the Florida East Coast Automobile Association

Digitized by Google

The new "STEEL-STUDDED CONTINENTAL TIRE" is a very resilient tire, especially constructed with heavy walls and tread. Over this is built an extra heavy tread with many layers of the strongest Egyptian cotton canvas, which protect the carcass of the cover and the inner tube from the steel studs, which are firmly held in place by being vulcanized into the mass of material of which this outer tread is constructed.

These tires are the safest for slippery streets, asphalt, etc., and are already in use on many of the better class automobiles.

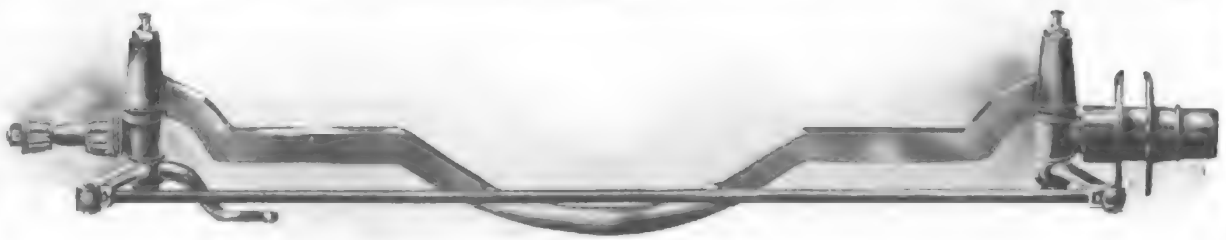
YOU SHOULD HAVE THEM FOR
YOUR WINTER EQUIPMENT

The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen. Mgr.

FACTORY: HANOVER, GERMANY **43 Warren St., New York**

WE WILL EXHIBIT at Madison Square Garden, New York, January 13-20, 1906, space 147. 69th Regiment Armory, New York, January 13-20, 1906, room "I." Coliseum, Chicago, February 3-10, 1906, spaces 274-278.



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

Digitized by Google

National

Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made **1,094 3-16 Miles in 24 Hours**, breaking the former World's Record by 78 9-16 miles, and **1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second**, breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**

Model D—NATIONAL—One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

National Motor Vehicle Co.

1006 E. 22d St.

INDIANAPOLIS, IND.

Member American Motor Car Mfrs. Association, Chicago

DISTRIBUTORS:

Linscott Motor Co.,	161 Columbus Ave., Boston
Homan & Schultz Co.,	38th St. & Broadway, New York
Ralph Temple Auto Co.,	310 Michigan Ave., Chicago
Tioga Auto Co.,	Broad & Tioga Sts., Philadelphia
Liberty Auto Co.,	138 Beatty St., Pittsburg
Nat'l Motor Car Agency,	705 S. Main St., Los Angeles

KINGSTON

1906 TYPE-K- AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.

Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

OVER 31,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,

KOKOMO, INDIANA, U. S. A.

Digitized by Google

REO

REO Touring Car, 16 horse-power, 1600 pounds, 90-inch wheel base. Four or five passengers. Side-door detachable tonneau. 35 miles per hour. $1250.

A Great Economy Test

A REO 16 horse-porse bus with the same engine as the touring car shown above won the National Trophy and two other prizes in the New York Motor Club's great six-day Economy Test, by carrying its load 682 miles at a total cost (including ferriage) of $2.93 per passenger.

The four-seated REO Runabout (price $675) won the gold medal for cars up to $1500, and one other prize, carrying four passengers 682 miles for $3.38 per passenger.

Freeze-proof, jar-proof radiator, perfect and positive oiler, simple operation and simple enduring strength are some of the features which make REO the car that practical motorists want.

Write for the REO book that tells why.

REO Motor Car Co., Sales Department, Lansing, Michigan
R. E. OLDS, Pres. R. M. OWEN, Sales Mgr.

Agencies throughout the United States.

MICHELIN

Go Faster—Last Longer

Why? MORE PURE RUBBER
EXCLUSIVE FABRIC
SUPERIOR VULCANIZATION
UNEQUALED WORKMANSHIP

KNOWN THE WORLD OVER
THAT
10,000 MILE
TIRE

MICHELIN TIRE AMERICAN AGENCY, Inc.

Telephones: 760-761 Madison Sq. 6 WEST 29TH STREET, NEW YORK E. D. WINANS, Gen'l Mgr.

Branches in all large cities

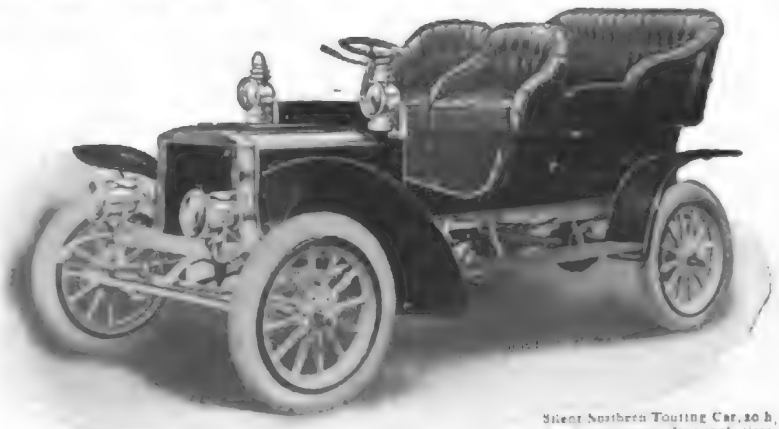
Northern

¶ You will find in the Silent Northern mechanical refinement not equaled—even approximated for several times the price.

¶ Northern Crank Case and Gear Case enclosed, protecting all mechanism from dust and water; Northern Three-Point Motor Support, which guarantees a perfect alignment of driving mechanism under all conditions, and Northern Oil Base, which insures perfect lubrication in any temperature, are exclusive advantages.

¶ *Only Three* vital points to oil—all spring shackles, strut rods and truss rods self-lubricating and no side levers.

¶ In luxury of upholstering it is not excelled by any. The quietest and easiest running car in the world—and the only one at the price equipped with *four-inch* tires.



Silent Northern Touring Car, 20 h. p., 5 passengers, four-inch tires, gas and oil lamp equipment, $1800.

1909 MODELS—Model "K" 30 h. p. Touring Car with gas and oil lamp equipment, $3,000. 20 h. p. Limousine, $2,500. 20 h. p. Touring Car with gas and oil lamp equipment, $1,800. 7 h. p. Sturdy Northern Runabout with lamp equipment, $850.

Write for Circular No. 14; contains important advance information.

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member of Associations of Licensed Automobile Manufacturers — **Chicago Agents: KELLEY-HUNTER CO., 1449 Michigan Avenue**

Compound Doctor's Stanhope

A Doctor Can't Afford To Take Any Chances

Free from NOISE and VIBRATION

Price, $1,400.00

12-15 H. P.

The use of any of our models ensures Endurance and Reliability.

Only the very best material obtainable, assembled by the most expert mechanics, enters into its construction.

Chassis is the same as used in our Model Four, Light Touring Car, which carried five people in the New York Motor Club's recent Economy Test and defeated every touring car entered.

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

Don't be afraid of water freezing

You can enjoy motoring in the winter time without subjecting the circulating system of your motor-car to the dangers of freezing and bursting.
All you need is one charge of

No-Mor Auto-Freeze

Put it in your circulating system and you won't have any freezing troubles even at 10 degrees below zero. Already dissolved, doesn't clog the system; contains nothing that will corrode the metal or injure the rubber.

It's a wise precaution to use No-Mor Auto-Freeze and is liable to save you many times its cost. Think of the money you would have to spend to repair the damage if the water pipes should burst. Think of the inconvenience and delays to which you would be subjected. Do you want to run these risks when they can be overcome so easily?

75 cents a gallon at dealers' or f. o. b. Cleveland, Ohio. **Sold only in 5 and 10-gallon cans.**

Chemist's Report

THE GENERAL LABORATORY CO.
Chemists
125 Quebec St. Cleveland, Ohio

"We have examined and tested No-Mor Auto-Freeze and find that it will not corrode brass, aluminum, copper, galvanized iron or solder, and that it will remain fluid at 10 degrees below zero Fahrenheit. Another good feature of the product of this formula is that it will not crystalize out, hence no danger of clogging the circulating system."

THE GENERAL LABORATORY CO.
(Signed) F. N. Sealand.

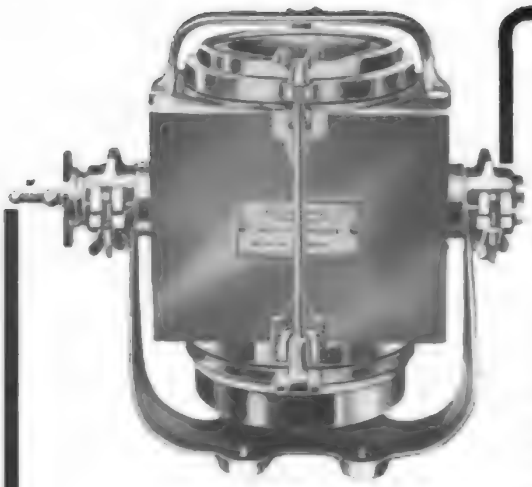
Dealers find it pays to handle **No-Mor Auto-Freeze.** There is a demand for it and selling is easy. Write for items and full particulars.

Owen Chemical Co.

45 Vincent Street **Cleveland, Ohio**

"Firestone"
Side-Wire Tires
are used on nine-tenths of all the commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by *hard experience* that the "*Firestone*" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.
Firestone Tires wear like iron. They hold their shape—they give satisfaction.
Then Why Not "Firestone?"
Firestone Tire and Rubber Co., Akron, Ohio
New York Chicago Philadelphia Boston St. Louis
San Francisco Los Angeles

Digitized by Google



The Neverout

TRADE MARK

Patent Invertible

Safety Gas Producer

for 1906 is now ready

A still further development of the ingenious model which created such a stir last year.

Many improvements have been made and today the superiority of the *Neverout Safety Gas Producer* over other lighting systems is more marked than ever before.

The gas is of the driest and purest quality, and costs much less than when supplied by any other method—less than ½ cent per hour.

Always ready for instant use and one movement of the hand starts the generation of gas. Extinguished at any time without after-generation or odor or waste.

This simple, efficient gas producer is bound to grow as famous as

The Neverout

TRADE MARK

Mirror Lens Searchlight

Money back if not satisfactory. Write for free illustrated catalogue.

ROSE MANUFACTURING CO., 912 Arch Street, Philadelphia

Largest Searchlight Factory in the World

Every penny spent for

FISK TIRES

is regained in value by the purchaser. We believe in giving just a little more in tire quality than any other maker for what you spend; it emphasizes the fact that we are earnest in our efforts to extend to our patrons a "Square Deal."

Compare for yourselves the difference in Quality between Fisk Tires and those of other makes.

They actually cut your tire expense in two, doing away with all exasperating "tire troubles," and turn drudgery into uninterrupted pleasure. Our methods of handling Fisk Tire users will appeal particularly to those who appreciate a "Square Deal."

The Fisk Rubber Co., Chicopee Falls, Mass.

BRANCHES

New York, 754 Seventh Ave.
Boston, 226 Columbus Ave.
Springfield, 40 Bridge St.
Philadelphia, 138 N. Broad St.
Minneapolis, 704 Hennepin Ave.
Atlanta, 103 N. Pryor St.
Syracuse, 423 S. Clinton St.
Buffalo, 893 Main St.
Cleveland, 318 Euclid Ave.
Los Angeles, 1034 Main St.
Detroit, 254 Jefferson Ave.
Chicago, 1251 Michigan Ave.
Kansas City, 1330 Main St.
St. Louis, 3908 Olive St.
San Francisco, 114 Second Ave.

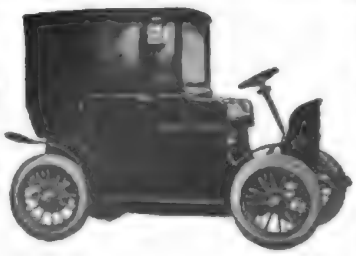
You can deal with us from a distant point the same as at the factory.

Digitized by Google

Columbia

Electric Town Carriages

NEW MODELS NOW READY



The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

ELECTRIC VEHICLE COMPANY

Members Association Licensed Automobile Manufacturers

Hartford, Conn.

New York Branch: 134, 136, 138 West 39th St.
Chicago Branch: 1413 Michigan Ave.
Washington: Washington R. T. Transportation Co., 15th St. and Ohio Ave.
Philadelphia: Pennsylvania Electric Vehicle Co. 250 North Broad St.
Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

8,000 MILES

Perfect Satisfaction, Never Breaking

HOTEL TOURAINE
BOSTON

July 30, 1905.

BRAMPTON BROS., Ltd.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

1906 CARS

Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars.

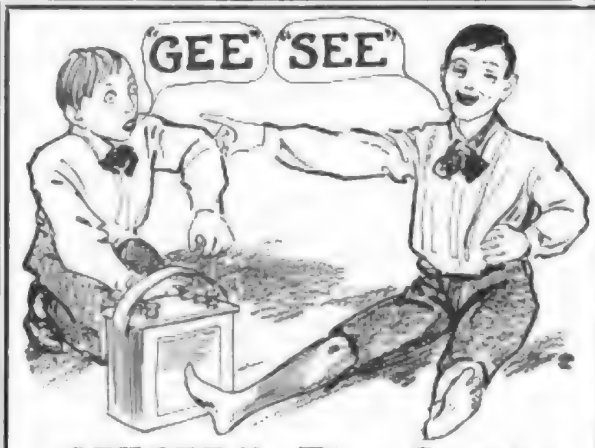
Catalogue mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 38th St., New York. Philadelphia—318-320 N. Broad St.
Boston, Mass.—202-204 Columbus Av. Cleveland, O.—406 Erie St.



"GEECEE," The Sparker

This battery is unequaled as an ignitor

It is higher in capacity and voltage than any wet battery now on the market.

The Electorlyte (acid) is in suspended form. It is made dry by a special process, enabling it to retain its moisture indefinitely.

Therefore it will never shock you by leaking out and ruining clothing, connections and anything else it comes in contact with. You have no such protection in the use of a wet battery.

Royal Battery Co.

NEW YORK

National Sales Corporation, Factory Sales Mgrs., 256 Broadway, New York

BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

K. FRANKLIN PETERSON, 166 Lake St., Chicago.
THOS. J. WETZEL, 11 Warren St., New York.
} Direct Factory Salesmen.

CHAS. E. MILLER, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O.
} Sales Agent Carrying Stock.

POST & LESTER CO., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

200 South Geddes Street SYRACUSE, N. Y.

Digitized by Google

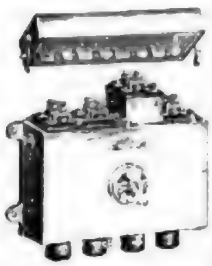
Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in.... **WILKES-BARRE, PA.**
will be one of the largest and most modern automobile plants in existence. We will move into the new plant about January 1, 1906. Address until then.....

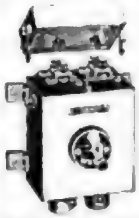
MATHESON MOTOR CAR CO.
.....Holyoke, Mass.



REGARDING COILS

Our 1906 line is a revelation. By extensive tests of **every** nature it has **proved** itself the most **rapid**, most **economical**, most **durable** and most **reliable** in the world (bar none).

PITTSFIELD



means Perfection **sure**, in matters pertaining to the Ignition System of a motor car.

You cannot puncture or rupture a Pittsfield Coil. The **Perfect Insulation** is **PROOF** against these troubles. Pittsfield Coils are in **every possible detail,**

PERFECT

THE PITTSFIELD
1906 Special Jewel Spark Plug prevents fouling or short circuiting. Sparking point and chamber between core and shell *thoroughly cleaned* at each explosion.

THE PITTSFIELD
1906 *Commutator or Timer* is strong, reliable, and *we guarantee a positive contact under all conditions.*
Get details before contracting for 1906 requirements.

PITTSFIELD SPARK COIL CO., Pittsfield, Mass.

EQUIP YOUR CAR WITH THE PREST-O-LITE GAS TANK

No Waste.
No Odor.
Tips Never Clog.
Needs no Attention.

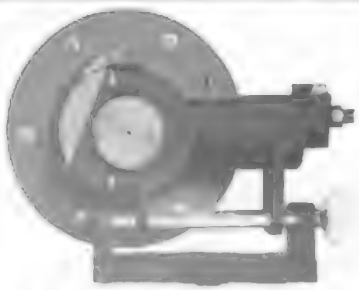
SIMPLE ENOUGH
When you want gas, turn it on. When you don't, —turn it off.

Extreme Cold Cannot Affect It
ALWAYS READY FOR USE

An Absolute Necessity where Good Service and Convenience are Considered worth while

OVER 5,000 SOLD THIS SEASON — Write for Booklet, List of Agents, Etc.

PREST-O-LITE CO., - Indianapolis, Ind.
Exclusive Licensees under patents of the Commercial Acetylene Co.
AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL



The P. T. C. Power Tire Pump

It is designed to inflate pneumatic tires by POWER driven by friction from fly wheel. Always in place. Started by turning a screw. Write for circular.

The Pacific Tucking & Manufacturing Co.

471-3 18th Street, BROOKLYN N. Y.

Digitized by Google

AN IDEAL XMAS PRESENT

THE AUTO-METER

A most acceptable gift to any friend who owns a car. Its presence on his dashboard will be a constant and pleasant reminder of the donor.

It Tells How Fast and How Far

a car travels, with absolute accuracy. We are issuing a **handsome engraved Christmas certificate** which entitles the bearer to an Auto-meter. *Write for particulars.*

WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston Mass. Warner Instrument Co., 1201 Broadway, New York City, N. Y.
Warner Instrument Co., 806 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heinsman & Pearson, Los Angeles, Cal.

DIETZ

THE **DIETZ** OIL LAMPS

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

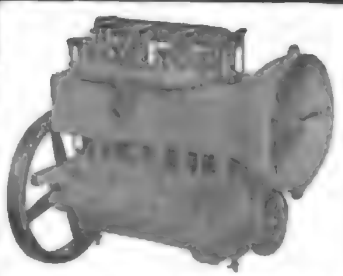
R. E. DIETZ COMPANY, 37 Laight St., New York

ESTABLISHED 1840

WE HAVE IT

Absolutely Tested by all kinds of Herculean Work

Positively Proved by our months of faultless performance



Cylinders surrounded by Hood with Fan connection on outer end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3½x4 inches.
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¾ inches.
Bearing on Connecting Rods, 2x1¾ inches.
Bearing on Wrist Pin, 1¾x1¾ inches.
Connecting Rods of drop forgings with phosphor bronze Crank Shaft.
Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 19¾ inches.
Center of Crank Shaft to bottom of Motor, 6¾ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES FOR LIGHT POWERED CARS REBUILT

REFERENCE: JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

HAVE YOU SEEN THE NEW **KOKOMO** MECHANICALLY-ATTACHED

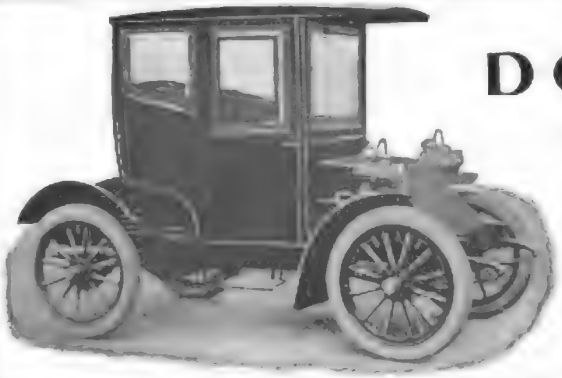
AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,

KOKOMO, IND.



A SPLENDID

DOCTOR'S CAR

THE ADAMS-FARWELL MOTOR CAR

Three Cylinder Gasoline Motor :: Revolving :: Air-Cooled

Operated from rear seat or from folding front seat.
All windows may be lowered, making an open car.

NO WATER. NO RADIATOR. NO FLYWHEEL. NO MUFFLER.
AUTOMATICALLY GOVERNED. NO FAN.

Cylinders 5 in. Bore. Displacement 265 cu. in. 20-25 Horse Power.

$2,500

Chicago Salesroom: 1536 Michigan Ave.

THE ADAMS COMPANY DUBUQUE, IOWA, U. S. A.

GAS-AU-LEC

"THE SIMPLE CAR"

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

BERKSHIRE AUTOMOBILES

High Class Touring Cars

Made and Tested in the Berkshire Hills

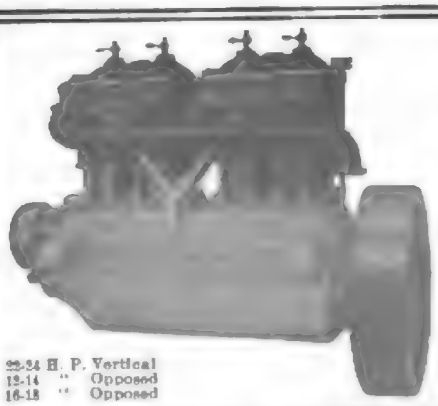
1906 Models Ready December 15th.

16 H. P. $2,000. 25 H. P. $2,500. 40 H. P. $4,500.

Douglas Andrews Company,

SELLING AGENTS.

1623 BROADWAY, NEW YORK.



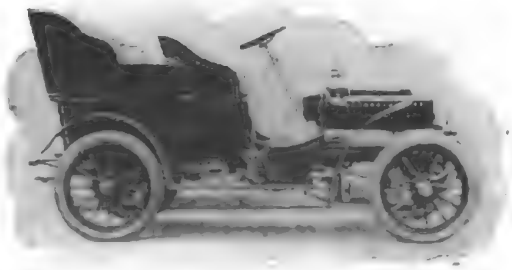
22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google



Wolverine D

Double-opposed Motor
Under the Hood

Bevel Gear Drive

3-speed Sliding Gear
Transmission

18 Horsepower (Actual)

Price, $1,250.00

Wolverine Automobile and Commercial Vehicle Company

Dept. "C." **Dundee, Mich.**

THE ANDERSON SPEED METER

AN IDEAL XMAS GIFT

Bell rings miles per hour. Meter and clock combined. Adjusted in 15 minutes. Attention of driver is not distracted. No light required at night. Size, 4½x5½x3½. Handsome brass weather-proof case. Price $25.00, delivered in U. S. Circular on request.

The Electric Speed Meter Company
141 EAST 4th STREET CINCINNATI, OHIO

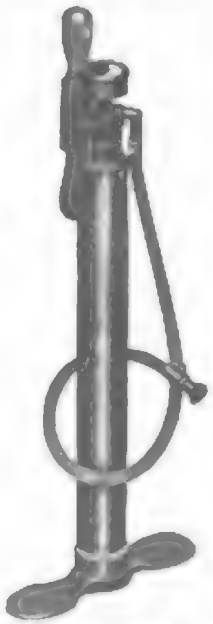
The Wray Compound Air Pump

with pressure register, price complete, $6.00

Inflate your tires to the following pressure:

4 1-2 in. Tires		3 1-2 in. Tires	
Ft	Re	Ft.	Re
60 lb.	75 lb.	70 lb.	80 lb.

4 in. Tires		3 in. Tires	
Ft.	Re	Ft.	Re
60 lb.	75 lb.	60 lb.	70 lb.



Patent Allowed

Wray Pump & Register Co.

191-193 Mill St.,

ROCHESTER, N. Y.

Send for complete catalog.

MOLINE for 190

Model "A" 30-36 H. P. $2500.00
Model "C" 18-20 H. P. $1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. $1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.

Advance circular ready for distribution.

Moline Automobile Co.

EAST MOLINE, ILLINOIS, U. S. A.

Digitized by Google

YOUR NAME IS IN

EVERYBODY AUTO READ

The Auto Owner

WHY THEY AUTO

It contains the most complete set of touring maps of the U. S. and Canada ever published.

ALSO

The Anatomy of the Automobiles

Showing with detailed illustrations the inside workings of the leading American and foreign Automobiles.

AND

Diseases of

Gasoline, Steam and Electric Automobiles, Motor Cycles and Power Boats, and How to Cure Them;" a practical treatise on the automobile, motor cycle and power boats for the "owner."

AND A

Directory of the Automobile Owners

for Mo., Ill., Ind., Ohio, Mich., and 100 of the largest automobile clubs in the United States.

ALSO

A Directory of Hotels and Dealers

in the United States and Canada.

A postal will bring full information.

Price, Leather Bound, $2.00
Paper Cover, $1.00

THE AUTO OWNER PUB. CO.

DEPT. A.

811 Chestnut Street ST. LOUIS, MO.

Ask Any Owner Of A Royal Tourist.

This Letter is a Mild Sample.

Toronto, Dec. 2, '05.

THE ROYAL MOTOR CAR CO.,
Cleveland, Ohio.

Gentlemen—My family are not particularly fond of driving in the cold weather, and I have, therefore, laid up my car until Spring. As I had the honor of signing the first Canadian order for a Royal Tourist, thought you would be interested in what I thought of the machine after one season's experience, and have only to repeat what Prince Louis of Battenberg had to say when traveling in the machine, "a wonderful car, good enough for any man living." Quite a number of your cars have come to Toronto, and the above few words express the opinion, I think, of all the owners.

Wishing you the success that your machine should bring, I am, Yours truly, WM. J. SMITH.

ROYAL

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

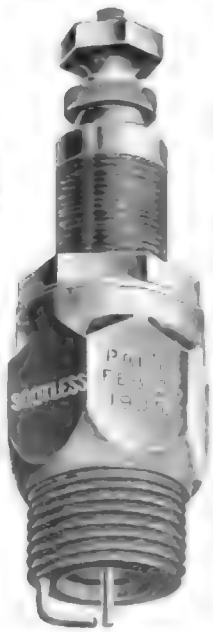
AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile & Supply Co., Lim., Toronto, Ont.; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos-Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.; Gus Boyer, San Francisco, Cal. Member A. L. A. M.

Send for Catalogue.

SOOTLESS

A NEW SOOTLESS
MICA SPARK PLUG



Indestructible
No Asbestos Packing to leak and get out of order.

Double Explosion Chamber
A new and valuable feature.

Strongest Plug Made
All Threads.

Never Breaks
which makes all other so-called Sootless Plugs very expensive and nearly useless.

Extra heavy lengthwise Mica Insulation.

Doubly Protected on Engine End.

Guaranteed Six Months

Price, $1.75

Manufactured by
THE OAKES & DOW CO. 40 Sudbury St. Boston, Mass.

EXCELSIOR SUPPLY CO., Chicago, Ill., Western Agents

Hotel Marlborough

Broadway, 36th and 37th Sts.
Herald Square ::: New York

MOST CENTRALLY LOCATED HOTEL ON BROADWAY

Under New Management Since January, 1905

Completely Renovated and Transformed in Every Department

The Largest and Most Attractive Lobby and Rotunda in the City

Two Beautiful New Dining Rooms

Superior Table d' Hote Dinner every day from 6 to 9 p. m.

The Famous German RathsKeller

Broadway's Chief Attraction for Special Food Dishes

Popular Music *Better than ever before*

400 Rooms **European Plan** 200 Baths

HEADQUARTERS FOR AUTOMOBILISTS

Make Reservation for Rooms Early

RATES FOR ROOMS: $1.50 and upward; $2.00 and upward with bath. Parlor bedroom and bath, $3.00, $4.00 and $5.00 per day. Parlor, two bedrooms and bath, $5.00, $6.00 and $8.00 per day. $1.00 extra where two persons occupy a single room

Write for Booklet

Sweeney-Tierney Hotel Company

E. M. TIERNEY, Manager

Digitized by Google

E & J

MEANS

QUALITY In LAMPS

Lamp No. 70

REGARDING YOUR

1906 LAMP EQUIPMENT

We Guarantee to Please You in Both Quality and Price. Write us.

Edmunds & Jones Mfg. Co.

316 Riopelle Street, DETROIT, MICH.

Automobile Lamp Manufacturers

It is easy to avoid trouble—*simply insist upon licensed burners.*

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.

Badger Brass Mfg. Co. (Solar). Kenosha, Wis.

Commercial Acetylene Co., New York City, N. Y.

H. E. Dietz Co., New York City, N. Y.

A. H. Funke, New York City, N. Y.

Gray & Davis, Amesbury, Mass.

Manhattan Lamp Works, New York City, N. Y.

Motor Car Equipment Co., New York City, N. Y.

New York Coach & Auto Lamp Co., New York City, N. Y.

Rose Mfg. Co., Philadelphia, Pa.

Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

1906 SHAPE

WE EQUIP Pleasure Cars AS WELL AS Commercial Cars WITH Swinehart TIRES

WHICH ARE ABSOLUTELY SATISFACTORY UNDER ALL CONDITIONS

Write for Experiences of Others as Given in Catalog A

Swinehart Clincher Tire & Rubber Co.

AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

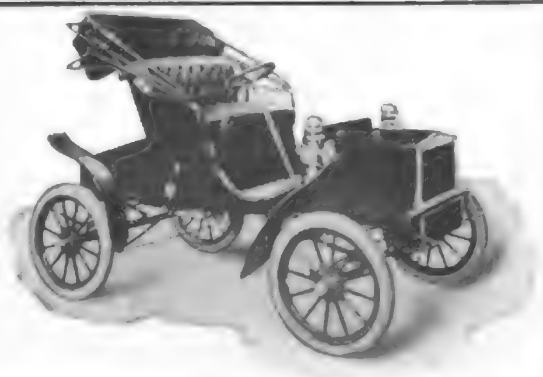
THE STEEL BALL COMPANY

840 Austin Avenue

CHICAGO ... ... U. S. A.

Digitized by Google

GALE



1906 Model "D" **$650** Minus Top $600

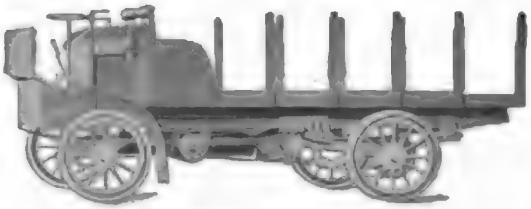
WHEEL-POST CONTROL, ROLLER BEARINGS to rear axle
ANY TIRES, 28x3, Pneumatic, Solid or any other kind
Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

WESTERN TOOL WORKS GALESBURG ILLINOIS

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

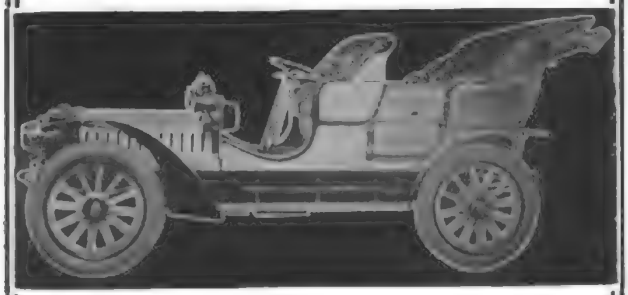
Largest and Oldest Manufacturers of Gasoline Commercial Cars.

We Exhibit in New York at Madison Square Garden Only, Jan. 13-20, 1906

MEMBERS A. L. A. M.

AUSTIN

A LUXURIOUS CAR



THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price $3,500.

Full Extension Top, $150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

AUSTIN AUTOMOBILE CO.
GRAND RAPIDS :: MICHIGAN

Keep Your Feet Warm

When riding or driving in your Auto use a

LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

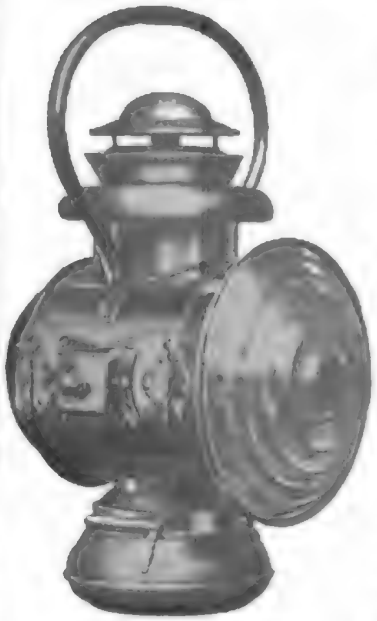
300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the **standard** and **best.** They burn **LEHMAN COAL** at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the **BEST** money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

LEHMAN BROS., Mfrs., 10 Bond St., New York

J. W. ERRINGER, Gen. West. Sales Agt.
43 East Congress St., Chicago, Ill.

Digitized by Google

AN EPOCH IN THE HISTORY OF OIL LAMPS



THE TOURIST

Cold Blast Lamp for 1906 is a wonderful light-producer and is the most dependable pathfinder made.

See the Lens?

Burns common kerosene, will not blow out or jar out, emits no odor, and is entirely free from the usual lamp troubles.

We can't pick a car for you, but our oil lamps are so superior they are easily recognized as absolutely the best on the market. They are the result of thirty-five years' experience in making oil lamps.

Write for booklet showing complete line.

C. T. HAM MFG. CO. ROCHESTER NEW YORK

Automobile Knowledge

means

Money in Your Pocket

We are the only school that provides complete, practical, *money-earning* and *money-saving* training by mail in operating, repairing, constructing, and designing every kind of motor vehicle and motor boat.

We have special courses for *owners*, shop and factory *employees*, *chauffeurs*, *motor boat* and *motorcycle users*, and *others*.

There are only two ways of learning anything. One is slowly and tediously to gain the experience yourself; the other (and better) way is to take advantage of the experience of others.

Though we offer you the long, hard-learned, thorough experience of experts who have done prominent work in the development of the new vehicle, we offer this experience in such form that to teach it to you will take only a few minutes and cost only a few cents each day—*the few minutes and the few cents that you ordinarily waste.*

Our instruction has been prepared and is conducted by well-known men, of long experience and proved ability both in automobile engineering and correspondence instruction. It is strongly endorsed by *prominent manufacturers*, *club* and *association officials*, *racing men*, *trade-paper editors*, and others whose standing in the automobile field lends authority to what they say.

In the automobile industry, the demand for competent men is so great that ability, no matter how acquired, is considered above "pull" and length of service. This makes it easy for an ambitious man to qualify quickly for good wages and prompt advancement.

For further information, send us your name on the accompanying coupon. This will cost you only a moment of time and a postage stamp, which will be well spent for interesting and convincing literature.

FILL OUT TEAR OFF MAIL TO-DAY

The Correspondence School of Automobile Engineering

Suite 1346 Flatiron Building, New York City

Please send to my address by return mail, a free circular, giving full particulars of your correspondence courses.

Name.....

Street and No.....

City..... State.....

or write for circular without sending coupon

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil.

Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.

Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.

167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

We make a special motor and transmission gear for

OLDSMOBILES

NORTHERN Runabouts

OLDS TOURING CARS

CADILLAC

FORD

THOMAS Models 17 and 18

GENERAL

YALE

AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND

POPE-HARTFORD SANDUSKY RUNABOUT

ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR

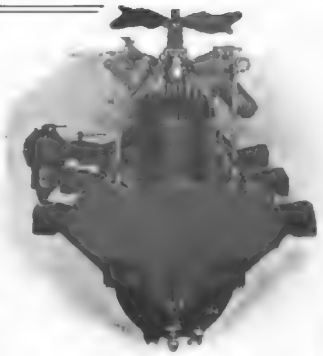
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3½x3½ in., 12-14 B. H. P.
Water cooled, 4 cylinder, vertical, 3½x3½ in., 14-16 B. H. P.
Water cooled, 4 cylinder, vertical, 4x4½ in., 20-22 B. H. P.
Water cooled, 4 cylinder, vertical, 4½x5in., 35-40 B. H.P.



MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.

The Standard American Cooler

THE WHITLOCK COOLER

Was used on the LOCOMOBILE RACER THAT FINISHED THIRD IN THE VANDERBILT CUP RACE. It was never touched during the race. IT DID ITS FULL duty. It held its water and kept the engine cool.

The Only Cellular Coolers Made in America

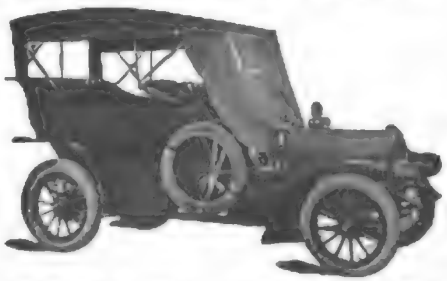
that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race. Quality and efficiency only figure in an event of this importance. We make coolers of the HIGHEST EFFICIENCY. The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

THE WHITLOCK COIL PIPE CO.
Hartford, Conn.

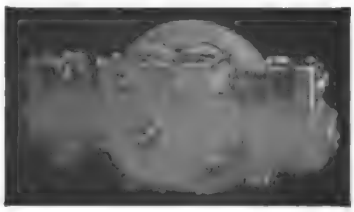
CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

Pat. allowed

We Think It's the Best Pump

and are so sure you'll think the same that we will let you have an

IMPERIAL-WIXON COMPOUND AIR PUMP

to try before you buy

$5.00 ON APPROVAL

An easy worker with big capacity.
Strongly, compactly made.
It abolishes tire troubles.
Ask any dealer or drop us a line.

IMPERIAL BRASS MFG. CO.
249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

REPAIRMEN

Our Winter SNAPS LIST of Sacrifices is now ready and goods are offered at sacrifice prices. Here are a few:

4½ H. P. Mobile Steam Engines.
5 H. P. Prescott Steam Engines.
14 and 18 in. Copper Steam Boilers.
Cadillac Front Axles.
Bevel Differential Gears.
Copper Fuel and Water Tanks.
New Tubular Running Gears.

And hundreds of other attractive lots of goods you need. Write us for the SNAPS lists.

Neustadt Auto & Supply Co.
826-830 South 18th Street, ST. LOUIS, MO.

LATEST TYPE **WILLARD** LATEST TYPE

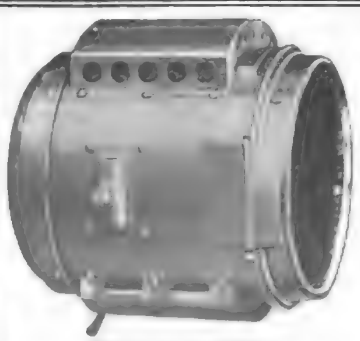
STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio



Prices on application.

PECK PILOTS

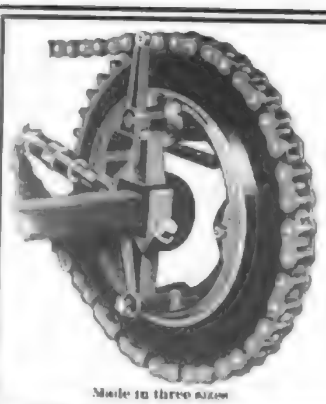
Are built to project all the *Light*.

Their construction is a guarantee against future trouble. The Results justify their selection for the finest cars. We aim to give the Strongest Lamp—the best Mirror Reflectors—the best tips and the finest finish of any on the market.

Our prices are reasonable—Why not get the best value for your money.

THE SCOVILLE & PECK CO., NEW HAVEN, CONN.

Digitized by Google



Made in three sizes

GARFORD PARTS

Some of the best known high priced touring cars for the coming season will be composed exclusively of Garford parts. In a great many high grade vehicles they will be conspicuous features of construction. Isn't that enough to establish the character and worth of Garford products? We regret that for the present we cannot accept further orders for touring car parts without sacrificing the interests of present customers. Our productive capacity for 1907 will be so enlarged as to avoid the disappointment of fruitless inquiry.

MOTOR WAGON PARTS

We can, however, promptly execute orders for steering gears, brakes, sprockets, motor hangers and other parts for motor wagons. They are suitable for all classes of commercial power vehicles, from the lightest to the heaviest. They are not "freak" components of a wonder working vehicle. They enjoy the rare distinction of having been thoroughly tested for some years past in the most varied and severe kind of commercial service. Circulars 2, 3, 5, 10 and 11 give information concerning them.

THE GARFORD COMPANY, Elyria, O.

Sales Manager: HAYDEN EAMES, Cleveland, O.

Pinion and Section Type also supplied.

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.

CHICAGO

MOTORS — All Commercial Sizes

CONTINENTAL ENGINE CO.

NEW OFFICE AND FACTORY

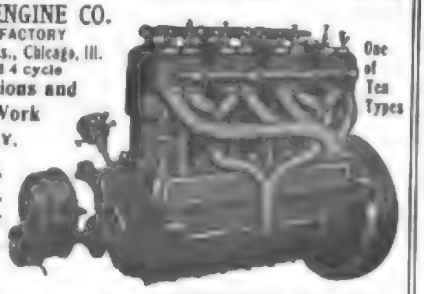
Cor. Kingsbury & Huron Sts., Chicago, Ill.

1½-40 h. p. 2 and 4 cycle

Designs, Specifications and Special Contract Work

OUR SPECIALTY.

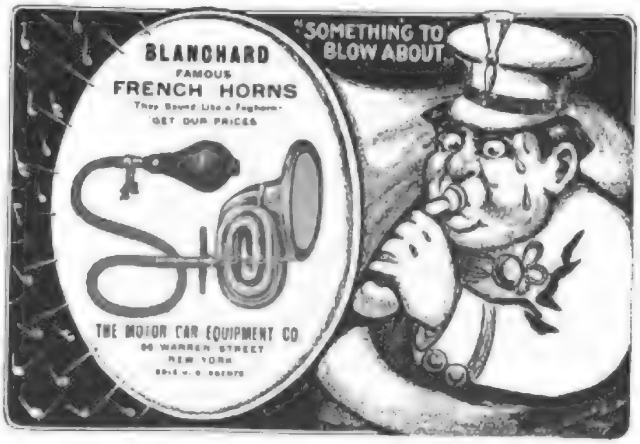
4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.



One of Ten Types

Telephone North 1607

VERTICAL AND HORIZONTAL



Baldwin Automobile Chains and Sprockets

Best Material

Accurate Construction

SEND FOR CATALOGUE

BALDWIN CHAINS AND SPROCKETS

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.

E. Franklin Peterson, Western Sales Agent
166 Lake Street, Chicago, Ill.

Veeder ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

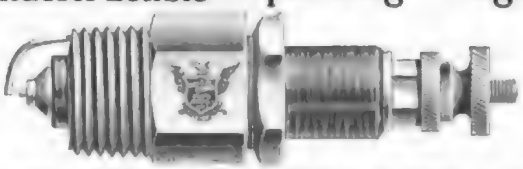
"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

Digitized by Google

AMERICAN Indestructible Sparking Plugs



Stand the test where all others are knocked out of business. Every one we sell brings us more business. This fact shows what they are. The **Original and Only Double Insulated Pure Mica Core. All** others are worthless imitations. Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.

AMERICAN COIL COMPANY
FOXBORO, MASS.
Pacific Coast Branch, 306 McAllister St., San Francisco

Leather belts invite trouble
Something is always happening to them and putting the lubricating system or fan out of order.

TRADE MARK
Powco
Steel Belt
FOR OIL-PUMP OR FAN

is as pliable as leather, but stronger and more durable, and always works perfectly.

"Lasts as Long as the Car"

Your AUTO dealer should have it. If not, send us length of belt you are now using, name of car, and $3, and we will send you a POWCO BELT by return mail. Money back if not satisfactory. Write for Circular D.

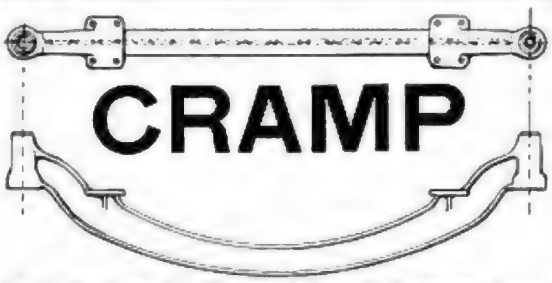
Philadelphia Ornamental Wire Co.
628-630 Filbert St., Philadelphia

MUD
FORGET IT AND USE WEED'S TIRE GRIPS.
POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST. NEW YORK CITY.

MUD GUARDS
HOODS AND FORGED IRONS
"The Best Kind"
HAYES MFG. CO.
750 Bellevue Ave. Detroit, Mich.

STOP THAT NOISE!
NEW PROCESS PINIONS
Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.
LET US HEAR FROM YOU.
THE NEW PROCESS RAW HIDE CO.
SYRACUSE, NEW YORK

Lexington Hotel
22d and Michigan Blvd
Absolutely Fireproof
European Plan – $1.50 and up per day.
The nearest and most convenient hotel to the Automobile District and Exhibition Halls for the February Show—special rates by the week
INTER-STATE HOTEL CO.
Owner & Prop. E. K. Criley, Pres., T. M. Criley, V. Pres., L. H. Finey, Sec.-Treas.



CRAMP
The Winton Front Axle Casting of Parsons' Manganese Bronze
Fifty thousand pounds of Ingots furnished for the 1906 Cars.
The William Cramp & Sons & Ship Engine Building Company
PHILADELPHIA, PENNA.

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.
VERY TOUGH AND HARD.
S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.
VERY HARD AND DURABLE, but cannot cut the journal.
In ordering Phosphor Bronze Castings n te adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, Pa.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 250 North Broad St.
New York, 49th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 33 South Raymond Ave.
Minneapolis, 3d Ave. So. & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 536 Centre Ave.
Rochester, 150 South Ave.
Portland, Ore., 149 5th St., N.
Cleveland, 404 Huron St.
Detroit, 205 Jefferson Ave.
Chicago, 200 East Lake St.
Los Angeles, 334 S. Main St.
Buffalo, 649 Main St.
Boston, 39 Stanhope St.
Savannah, 310 Bull St.
St. Louis, 3944 Olive St.
Denver, 1449 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada.

Dust Guards

Make Motoring a Clean Sport

For $20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

Lennox Building, CLEVELAND, OHIO

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

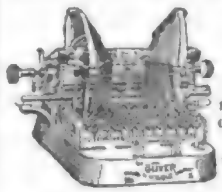
We Want Agents for the

OLIVER Typewriter

—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently.

Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

FOR AUTOMOBILE

USED BY THE LARGEST MANUFACTURERS

HARRIS OIL

Sold at all Principal Garages

A. W. HARRIS OIL CO.

330 South Water St., Providence, R. I.
and
56 Fifth Ave., Chicago

LUBRICATION

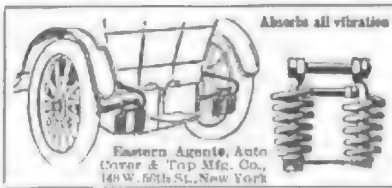
"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.

39 Cortlandt Street New York City



Absorbs all vibration

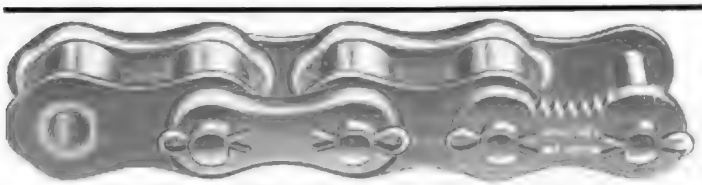
The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads

Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

Eastern Agents, Auto Cover & Top Mfg. Co., 148 W. 66th St., New York

SUPPLEMENTARY SPIRAL SPRING CO.
4527 Delmar Ave., St. Louis, Mo.



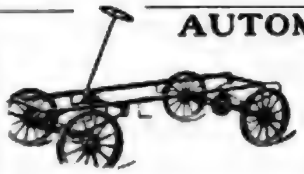
"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google



AUTOMOBILE RUNNING GEARS

WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO

Bausch & Lomb

MANGIN

Search Light Mirror Lenses

Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

BAUSCH & LOMB OPTICAL CO.

Manufacturers Microscopes, Photographic Lenses and Shutters, Eyeglass Lenses, Field Glasses, etc.

ROCHESTER, N. Y. NEW YORK, CHICAGO.
BOSTON, SAN FRANCISCO. FRANKFURT, A/m Germany.

Of course If we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
THE LEWIS & MATTHEWS CO.
Foreign and Domestic Cars — Automobile Selling Agts. — Garage and Supplies — Repairs — Used Cars
66, 68, 70 Stanhope St. Cable Address: "Autohead" Telephone Tremont 711 Boston, Mass., June 23, 1908

Herz & Company, 187 Elm St., New York, N. Y.:

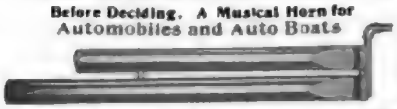
Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.

Very truly yours, THE LEWIS & MATTHEWS CO., Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth,
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

BY ALL MEANS HEAR
THE GABRIEL HORN
Before Deciding. A Musical Horn for Automobiles and Auto Boats



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—two, three or four horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 36th St.

STA-RITE

SURETY

Messrs. Clemens & Merz were sure of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1,094 miles. You can always be just as sure of any of the 47 sizes of improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your new car and save bother.

THE R. E. HARDY CO.
225 West Broadway, New York City

Garden Show Space, No. 78. Armory Show Space, No. 61. Coliseum Show Space, No. 178.

A Swell Joint

The acme of specialization—the limit of excellence—is represented in our

Universal Joint and Brake Drum

Your closest investigation of our claims will PROVE that NOTHING BUT THE BEST in EVERY RESPECT is used. Write us TO-DAY.

SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.

Direct factory representatives: K. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

TOOLS for producing duplicate Metal Parts

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class and every effort will be made to give satisfactory service.

L. T. GAUSS, 222 Mill St., Rochester, N. Y.

DIES for blanking, forming and drawing
DRILL JIGS
MILLING FIXTURES
VISE JAWS
SPECIAL CUTTERS, ETC.

SPIRAL TUBING **RADIATORS**
HOODS ANY STYLE OR SIZE
LONG MFG. CO.
381-3-5 Wabash Ave. CHICAGO

Digitized by Google

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

WELCH

1906 LIMOUSINE CAR 1906

FOR

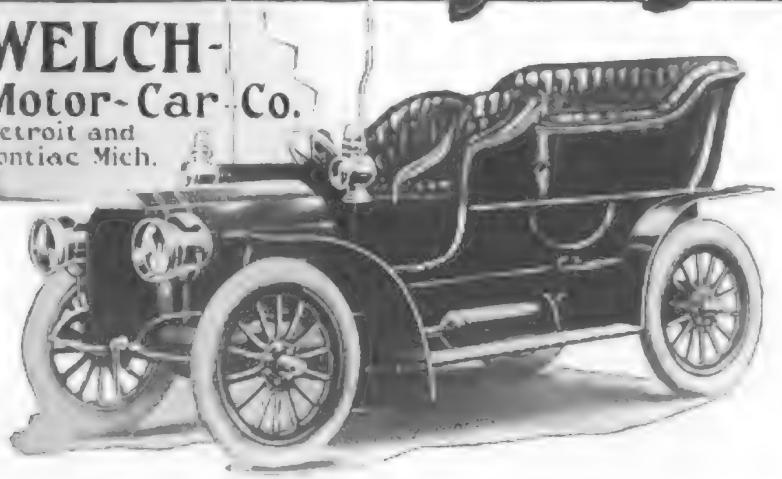
FALL AND WINTER USE

PRACTICALLY IMMEDIATE DELIVERIES

¶ Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS. ¶ Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. ¶ 4 to 50 miles on direct drive.

So simple a child can operate.

WELCH-Motor-Car Co.
Detroit and Pontiac Mich.



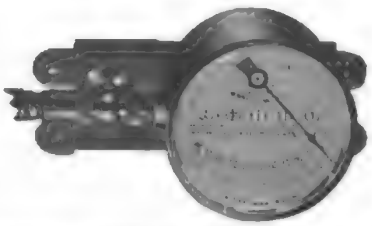
¶ The Automobilist who today doesn't include a Jones Speedometer in his list of accessories is eliminating two thirds of the pleasure of automobiling—and is encouraging the officer of the law to make his arrest.

¶ When the Judge says: "Did you have any *positive* means of determining the speed at which you were traveling?"—he is asking if your car was equipped with a Jones Speedometer. Don't forget that!

¶ The Mounted Officer with his primitive stop-watch method of timing the Automobilist can seldom make a case. Guess work testimony doesn't go in court. The Officer means well, but his method is wrong.

¶ Our Speedometer Bulletin contains speed information and tells of our Protection Tag. Free on application.

JONES SPEEDOMETER
122 West 32d Street, New York



DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

"OILEJAMMER"

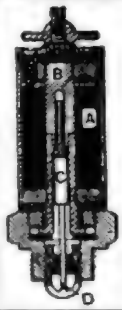
THE OIL GUN WITH THE EXTENSION NOZZLE
PREVENTS BREAKAGE
KEEPS YOUR HANDS
AND CLOTHING CLEAN

THE BEST OIL GUN EVER MADE AT ANY PRICE
BEST MATERIALS. WHEN EXTENDED 30 INCHES
CLOSED 11 INCHES. SENT PREPAID FOR $1.50

THE MOTOR CAR SUPPLY CO.
1427 MICHIGAN AVENUE, · CHICAGO
"EVERYTHING FOR YOU AND YOUR AUTO"

READ MOTOR AGE ... $2.00 per Year

Digitized by Google



LOW TENSION MAGNETO

THE GARON SYSTEM OF IGNITION

Combines all the good points of **the Jump Spark and Make and Break**, and is perfectly reliable. Easily applied to any engine, whether originally built for jump spark or make and break ignition.

Absolutely guaranteed *Let us show you how perfectly it works*

ASTER CO., 1591 Broadway, NEW YORK CITY

Garlick Auto Props

CUSHIONED TOPS

Use the Garlick Auto prop. It is cheap, strong and durable, and lengthens the life of a tire; keeps it right and proper. Better than hanging them on the wall. Will fit any machine, any weight. Send height of axle, from the floor, and price as below and we will send, express prepaid, to any part of U.S.

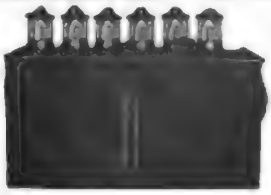
Adjustable

A—$2.00 set of 4 B—$3.50 set of 4

GARLICK AUTO PROP CO.
Madison Ave. and Broadway, Paterson, N. J.

Force Feed Lubrication

Constant Sight Feed. No Liquids



McCord & Co., 1402-30 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

JUMP SPARK COILS

For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

Send for Catalogue K.

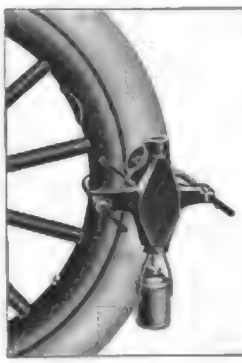
THE ENDELOCK-HEIDEMAN MFG. CO., South Bend, Ind.

Anti-Freezing Calcium Chloride

In cooling water of Automobiles **Won't Rust** or effect the metal. Freezing point 54° below zero. Non-precipitating.

Write For Our Circular

James H. Rhodes & Company,
107 E. Kinzie St., Chicago.

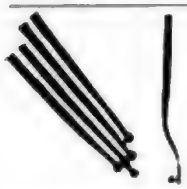


ANYBODY CAN USE IT

Blowouts, sandholes, glass cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co.
Topeka, Kan., U. S. A.



Auto Top Bronzes

Bronze Separators, Snaps, D Rings, Nuts, Screws, etc Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.

C. W. COOPS CO.
3 Appleton St., Boston, Mass.

GRAY & DAVIS
HIGH GRADE LAMPS.
AMESBURY, MASS.

Standard Roller Bearing Co.

STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles

Send for Catalogue. **PHILADELPHIA**

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

HIGH-GRADE

EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO.
Corner May and Commercial Streets, Dayton, Ohio

PACKARD ENAMELED IGNITION CABLES

NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

Electric Signs

Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.

U. S. ELECTRIC SIGN CO., Muncie, Ind.

DIAMOND CHAINS

Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

THE U. S. JACK

WITH UNIVERSAL HEAD

LIFTS ANY WEIGHT CAR UP TO **6000 Lbs**

A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 5 1-4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

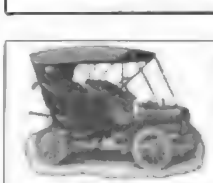
U. S. JACK CO., 352 S. Claremont Av., Chicago

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminate!
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.



Simplicity Automobile Extension Cape Tops
Simplicity Spray Hoods

CHARLES P. McCLELLAN, Fall River, Mass.

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES

MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS

THE

London Tops

Style
Durability
Quality

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

SPROCKETS

Chains and Differentials

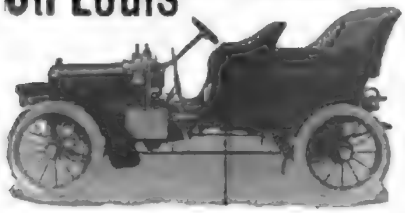
CULLMAN WHEEL CO.
1021 DUNNING STREET, CHICAGO, ILL.

Digitized by Google

Voltage—4, 6 and 8
Capacity
20 Amp.—Hours
Prices—$6, $9, $12
Other styles—
$3.25 to $32.00.
Established 1899
Catalogues on
Request.

AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

St. Louis 18-22 30-34 Actual H.P.



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS PEORIA, ILL.

WE ARE SOLE IMPORTERS OF
NIEUPORT IGNITION OUTFIT
The Best in the World.
Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire
ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

Graphite for the Motor

DIXON'S GRAPHITE
Motor Lubricants
Interesting booklet and samples FREE.
Joseph Dixon Crucible Co.
Jersey City, N. J.

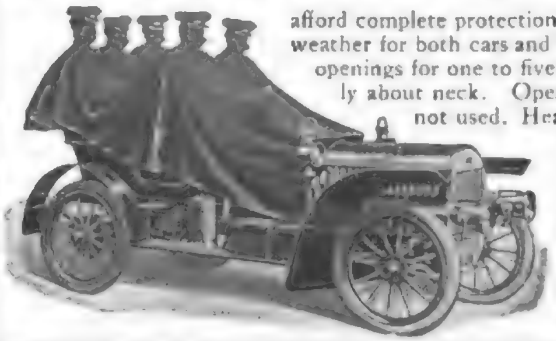
MOTOR CAR SPECIALTIES
and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

COOLERS FENDERS
B
BRISCOE MFG. CO.
Detroit, Mich. U.S.A.
HOODS TANKS

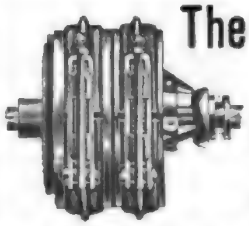
Truffault-Hartford Suspension
Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.
HARTFORD SUSPENSION CO.
69 Vestry Street, NEW YORK CITY

Special Design Finest Quality Built to Order
BODIES AND TOPS
C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

AVALON STORM APRONS

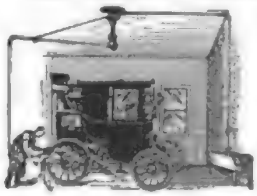


afford complete protection against storms and bad weather for both cars and occupants. Made with openings for one to five persons. Fasten closely about neck. Openings can be closed if not used. Heavy rubber cloth,—plaid back. We also handle
WEED CHAIN TIRE GRIPS
Prevent skidding and assist in traction on muddy roads.
Write for *Special Deal* prices on above.
The Ball-Fintze Co.
Dept. C. Newark, Ohio



The Ball Improved Transmission
and REVERSE GEAR
— FOR —
Automobiles and Motor Boats
MADE ONLY OF SPUR GEARS
Patented April 9, 1901; Nov. 3, 1903; Jan. 12, 1904; Feb. 23, 1904.

NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.
Western Agents: J. H. Neustadt Co., St. Louis, Mo.



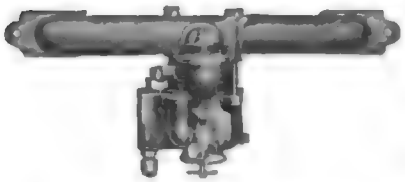
Overhead Washing Machines
A Time, Labor and Money Saver.
For Public and Private Garages. No garage is complete without them.
Send for descriptive pamphlet and prices.
A NECESSITY TO EVERY AUTOMOBILE OWNER
THE H. NICKOLSBERG MFG. CO., 68 Dey Street, NEW YORK

SHELBY SEAMLESS-STEEL-TUBING
BEST MADE FOR AUTOMOBILE CONSTRUCTION.
SEND SPECIFICATIONS
WE QUOTE PRICES
SHELBY STEEL TUBE CO.
PITTSBURG, PA.
BRANCH OFFICES—NEW YORK—CHICAGO.

Rajah SPARK PLUGS
The Most Reliable IGNITION ABSOLUTELY SURE
Price, Postpaid $2.00
RAJAH AUTO SUPPLY CO., 140 Washington Street New York

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00
Two-cylinder Queen	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD AND FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1207

1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1312 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

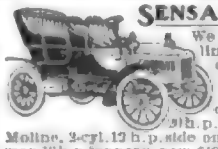
C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: 'PHONE CALUMET 1043

1323-1325 Michigan Avenue, Chicago



SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—MOLINE 4-cyl. 50 h.p. side entrance, new $1250; Moline, 2-cyl. 12 h.p. side entrance, new, $600; Hoffman 10 h.p. tonneau, new $400; Murray runabout, $200; Oldsmobile, $250; Buckboard, $200; Gale, 8 h. p. new, $300; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Fryer-Miller" "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

POPE
- TOLEDO
- HARTFORD
- TRIBUNE
- WAVERLY

ORLANDO F. WEBER CO.
(INCORPORATED)
Distributors for
CHICAGO and MILWAUKEE
1322-26 Michigan Ave. Phone 1899 South
321-25 Fourth St. Phone 2781 Main

EVERYTHING IN AUTO SUPPLIES

FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO.

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1328 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

PREMIER

FOR ILLINOIS AND IOWA

RALPH TEMPLE

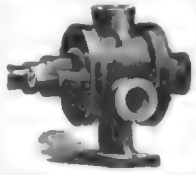
309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO



LOBEE ROTARY PUMP

6000 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 240 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York. A. L. Dyke Auto Supply Co., 4708 Olive St., St. Louis, Mo.

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3200 Spring Garden Street, Philadelphia, Pa.

ROBERT VOLT-AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS

30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.

88 Shelby St. Detroit, Mich.

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobiling. It will pay you to investigate our

Long Distance Gasolene Storage System "Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., X V Ft Wayne, Ind

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

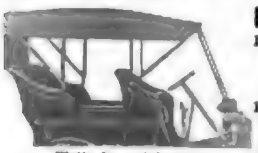
RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

SPRINGFIELD TOPS
3, 4, and 5 Bow
Aluminum Bodies
Springfield Metal Body Co
17 Birkle Ave.
Brightwood
SPRINGFIELD, MASS

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries
SEND FOR CATALOG

Miller Signal Co., 262 JACKSON BOULEVARD, CHICAGO



Eclipse Tops

LOOK BETTER
WEAR BETTER
MADE BETTER
ARE BETTER

than any others. It's an old story with us. We have been making good tops practically all our business lives.

Write for catalogue.

Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

ORIGINAL MANUFACTURERS OF
AUTO TOP MATERIALS

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.
Write for samples and price list.

L. J. MUTTY CO., Boston, Mass.

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX
FAYETTEVILLE, N. Y.

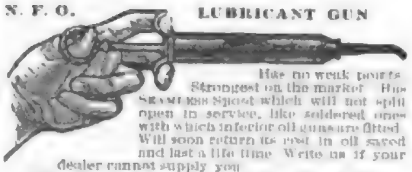
COMPLETE LISTS
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

CANDY CARBIDE
For FRENCH AUTO LAMPS (Impregnation does it all)
Packed only in 10 lb. cans. Price $2 each.
Discount to dealers in case lots of 12 cans.
SOLE MANUFACTURERS
ACETYLENE GAS ILLUMINATING CO.
108 WALKER STREET NEW YORK

N. F. O. LUBRICANT GUN

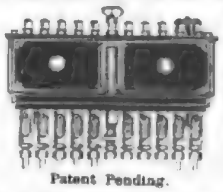


Has no weak points. Strongest on the market. The SEAMLESS Spout which will not split open in service, like soldered ones with which inferior oil guns are fitted. Will soon return its cost in oil saved and last a life time. Write us if your dealer cannot supply you.

New York & New Jersey Lubricant Co.
14 Church St., N. Y. 70 9th St., San Francisco

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

ALUMINUM
Aluminum Automobile Parts a Specialty
The Pittsburgh Reduction Company
Pittsburgh, Pa.

Gilbert Auto Fabric Supplies
LOOK FOR THE NAME
FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.
The Gilbert Mfg. Co.
New Haven, Conn.

Did You Ever Walk Home?

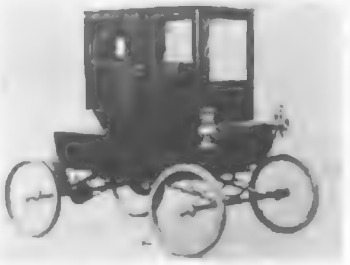
The Dayton Electrical Mfg. Company
75 Beaver Bldg. Dayton, Ohio

The IGNITION PROBLEM is SOLVED
in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.
No BATTERIES. No Coil. No COMMUTATOR.
Everything for Electrical Ignition.
LEON RUBAY, Sole U. S. Agents, 140 W. 28th St., N. Y.

THE SOLVAY PROCESS COMPANY'S "KAL-KRYSTAL" makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses

CARBONDALE CHEMICAL CO.
739 UNITY BLDG., CHICAGO

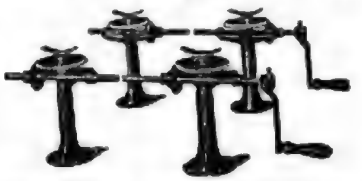


A high class Coupe Top. Fits Olds Standard Runabout, can be attached in thirty minutes and detached in ten. Front glass hinged and can be raised at will. Price, $60.00. Write for full description.

The Fellwock Autotop Co., Evansville, Ind.

SPECIAL AUTO PARTS
We make parts from your own design from either brass or aluminum
ON CONTRACT BASIS
Our positive power driven sight feed OILER will interest you. Write for description.
AUTO BRASS & ALUMINUM CO., Flint, Mich.

REST YOUR TIRES with the **"Springfield" Auto Lift**



Showing Lift in Position to Receive Car.
You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. BAY & CO., Pacific Coast Agents, San Francisco
THE SHAWVER CO., Springfield, O.

POCKET
Battery Ammeter
0 to 30 Amperes
Indicates in any position and in either direction of current
In testing single cells, the cord is not necessary.
Price $3 50
ELDRIDGE ELECTRIC MANUFACTURING CO.
Springfield, Mass.

The "Breech-Block" Plug

The Plug With a Handle

To take out your watch or open a Breech-Block requires just the same time, same tools, same effort, and one twist cleans the entire porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it comes out of the holder, and the gaskets of copper drop with it. No digging!

It is nickeled inside and out. Highly polished and dust-proof. Sparks between two platinum points and not between one point and the shell. Its points are protected.

Porcelains are hand turned and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of economy is left out of them.

Postpaid, Anywhere, $2.50. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

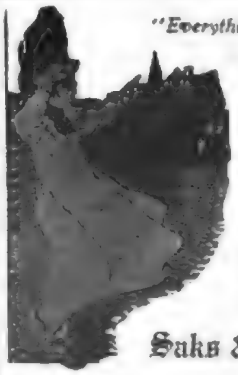
Digitized by Google

There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit any make of motor. State make of your motor when ordering.

HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

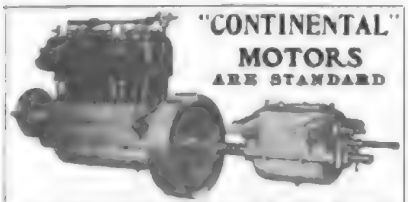
"Everything for the Autoist but the Auto"



THE NEW BOOK IS READY
PLEASE SEND FOR IT

We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

Saks & Company Broadway, 33d to 34th Streets NEW YORK



"CONTINENTAL" MOTORS ARE STANDARD

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 40 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car.

HIGHEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE
AVOID INFERIOR IMITATIONS
ASK FOR CATALOGUE

Continental Motor Mfg. Co. 240-244 W. LAKE ST. CHICAGO
E. F. PETERSON, Direct Factory Representative

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy** and **satisfaction** in having such work done outside of the city.

W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 371 Wabash Ave.

MAT'S BODY POLISH
Prevents the Finish from Cracking or Staining
Used by the Chicago Garages. Send for sample.
$2 PER GAL. **MAT. WEIS**
1412 Michigan Avenue, CHICAGO

C. O. T. ACID CURE SOLUTION AND VULCANIZING FLUID.

WHY worry over a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber size of cut. Not loosened by heat. Plain rubber patches both round and oblong.

CHAS. O. TINGLEY & COMPANY
Rahway, N. J.
Beckley-Raleston Co., Chicago, Ill., West. Dis.
Phoenix Auto Supply Co., Southwestern Agents.

HOT SPRINGS, ARK.
Only 20½ Hours from Chicago
VIA THE
WABASH

You can leave Chicago daily at 11:30 A. M., on the
BANNER BLUE LIMITED
the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.

Write for free Booklet telling all about this popular health and pleasure resort.

Ticket Office, 97 Adams St.
CHICAGO

C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A., Chicago.

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing
A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.
ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas.

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES
HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

MISCELLANEOUS.

Advertisements under this head 2 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE—1905 Packard, side entrance; $2,500. E. C. Bull, No. 754 Main St., Buffalo, N. Y.

FOR SALE—20 H. P. 1905 Locomobile with top; in perfect condition; price $2,000; owner getting 1906 car of same make. Address Monday, care Motor Age.

WANTED TO TRADE—New Simplex piano player for second-hand automobile; 28 pieces with it. Cost $310. What have you to offer. L. C. Larson, Sioux Center, Ia.

WINTON QUAD FOR SALE—Good as new, absolutely guaranteed first class in every respect, run not to exceed 2,000 miles, best of care; has extra inner tubes, gas lamps, fitted with Schebler carbureter, Warner instrument; cost over $3,300; will sell for $1,500; demonstration gladly given; car taken in trade for Model K Winton. O. W. Johnson, 202 N. Madison St., Rockford, Ill.

Very Low Excursion Rates For Christmas Holidays

To all points on the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, with limit returning January 3, 1906. Rate one and a third fare for the round trip. Individual Club Meals, ranging in price from 35c to $1, and Mid-day Luncheon, 50c, served in Nickel Plate dining cars; also service a la carte. No excess fare. Chicago city ticket offices, 111 Adams St. and Auditorium Annex. Depot, La Salle and Van Buren Sts., the only depot in Chicago on the Elevated Loop.

WILL TRADE quarter section of fine wheat land in Kansas for 1905 runabout; money maker for somebody. W. C. Guyer, Freeport, Ill.

FOR SALE—Hoffman ten horsepower tonneau car in first class condition; has mud all worn parts replaced; 28x3½ Diamond tires; this car will be sold at a bargain. J. L. Murray, 215 S. Main, Bloomington, Ill.

AUTOMOBILE—A 1904 Winton, in elegant condition. H. H. C., 1610 Reading Rd., Cincinnati, O.

FOR SALE—1905 White steam touring car in the pink of condition; fine cape top, five lamps, Prest-o-lite tank; refinished and looks as good as new; cost new $2,800; a big bargain at $2,000; would take smaller car in part payment. Adams & Hart, 47 and 49 N. Division St., Grand Rapids, Mich.

FOR SALE

THOMAS TOURING CAR—1904 model; 3-cylinder; seats five persons; perfect condition; thoroughly overhauled by factory recently; this car was driven by the owner eleven hundred miles from Macon, Mo., to Buffalo without an accident and never missed fire once on the trip; new tires this season; I refer to the E. R. Thomas Motor Co., of Buffalo, as to condition of car; my reason for selling is that I have purchased a larger type car; price and full description on application. Address owner, William R. Compton, Macon, Mo.

FOR SALE—8 H. P. Olds engine in runabout car; 2 new Morgan & Wright tires; $200. Box 143, Cayuga, Ind.

FOR SALE—Buckboard, '05; better than new; arranged to carry four; 3-inch tires on rear; other improvements; $225 and a bargain. H. B. Sparks, Charlottesville, Va.

FOR SALE—1905 Oldsmobile light tonneau car; 10 horsepower; paint, machinery and tires good as new; cost, with extras, $1,050; a bargain at $850. Address Ed Connine, Wexford, Mich.

FOR SALE—New two-cycle gasoline engine, ¼ h. p., $30. J. Hall, Mound City, S. D.

Digitized by Google

FOR SALE—Franklin, model E, runabout, in excellent condition; run six months; gas lamps, oil lamps and gas tank. L. E. Voorhes, 942 West Fifth St., Cincinnati, O.

FOR SALE—$325 takes my 1902 Model Winton touring car; paint is good, in good running order and is fully equipped. Edw. E. Gifford, Cochesett, Mass.

FOR SALE—1905 Olds touring car, 10 h. p.; A1 condition, having been used on paved streets. Address L. W. Huckins, Shreveport, La.

FOR SALE

WINTON TOURING CAR—Good bargain. Apply 84 E. 16th St., Chicago. E. W. Willcox.

FOR SALE—Touring runabout, 10-12 h. p., seats four; used little; fine shape; $390; want 4-cylinder. Clenzol Co., Sandusky, Ohio.

1905 WINTON, Model B, first class in every respect, run not over 2,500 miles, complete with cape top, two 8 in. Rushmore search lamps with generator, oil lamps, horn, 2 extra Michelin tires with Samson tread, extra inner tubes. 1906 Holly carbureter; this car with extras cost owner over $3,000; first check for $2,000 takes it; demonstration gladly given; have taken this car in trade for Model K Winton. O. W. Johnson, 202 N. Madison St., Rockford, Ill.

FOR SALE—3-cylinder 20 horse Pope-Toledo, in good shape; 32x4" tires, nearly new; 3 gas lamps, horn, extra tube and tools; owner has high powered car and will sacrifice for $550; cost $3,000; this is an exceptional snap. J. L. Murray, 215 S. Main, Bloomington, Ill.

FOR RENT

Building suitable for automobile factory, 25,000 square feet, very light, steam heat throughout, large yard, boiler, engine, electric freight elevator; fifteen minutes from down town; asphalt street, electric cars, etc; rent reasonable. Apply G. B. Read, 9 Plymouth Place, Chicago.

FOR SALE—12-15 H. P. touring car in good condition; cost $1,400, will sell for $500. Write for particulars to F. R. Morrison, Ashtabula, O.

FOR SALE—Packard late 1903 Model F; recently overhauled at factory. Will equip with brand new tires and sell for $750 cash. First check takes it. H. W. Beach, Montrose, Pa.

FOR SALE—1905, 50 H. P. Thomas Flyer, cape top, glass front, Gabriel horn, Hartford shock absorbers, five lights, perfect condition; a bargain; owner purchased 1906 Thomas. Address L. R. Clinton, Binghamton, N. Y.

FOR SALE—1½ h. p. motor cycle engine, $20. C. Shook, Waterloo, Iowa.

FOR SALE—Premier, Model F, 1905, four cylinders, air cooled, 16 h. p., side entrance, Studebaker top, glass front, side curtains, Presto light gas tank, four new lamps, tools, etc. Almost new. Cost $1,750. Price $1,100 cash. *No trades.* A. B. Clay, 1240, 324 Dearborn St., Chicago. Phone Harrison 2375.

HIGH-GRADE Marine and Automobile Engines, 2 and 4 cycle, 2 to 30 h. p. Lowest prices. J. Houle Motor Works, 8. East St., Holyoke, Mass.

1900 GROUT SURREY. Thoroughly overhauled; fine condition. Dr. Frank Graham, Tennessee Trust Bldg., Memphis, Tenn.

WORD BARGAIN—1904, Model C, 10 h. p. Ford auto; detachable tonneau, full lamp equipment, searchlight, Blanchard French horn, two extra tires and all modern appurtenances. Good condition. E. C. Clark, Paducah, Ky.

FOR SALE—Ford Model "F." Bought last July. Complete with top, storm apron, oil and acetyline lamps, Presto light gas tank, horn, heavy car type Fisk tires. Price $700. Address "Ford F.," care MOTOR AGE.

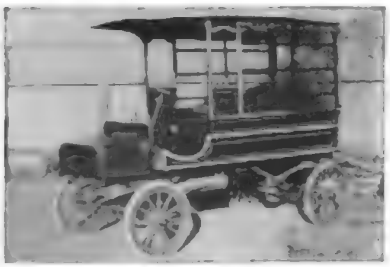
1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; and new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

Logan

1906

That Car of Quality



2 Cylinders Opposed. Air Cooled.

Speed 15 Miles per Hour. Capacity 1500 lbs.

THE DEPOT CARRIAGE AND BAGGAGE COMPANY

Kansas City, Mo., Nov. 22, 1905.

THE LOGAN CONSTRUCTION CO., Chillicothe, Ohio.

Gentlemen:—We want to let you know how well we are pleased with your "Light Air Cooled Delivery Car" which we purchased from you some six weeks ago. It has more than fulfilled our expectations, so much so that we will place an order for several more at once.

It is about doing the work of three two-horse wagons, and is covering from seventy to ninety miles a day with less expense than the shoeing of one team would amount to, and is so simple that any one of our drivers can operate same without any trouble.

Wishing you the success that you deserve in making so good a car, we remain,

Yours very truly,

THE DEPOT CARRIAGE & BAGGAGE CO., F. W. SCHOOLEY, Sec'y.

"Logan" MODEL I, WILL DO AS WELL FOR YOU

Write for Catalogue A 122.

The Logan Construction Co., Chillicothe, Ohio

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas headlights, cape top, portfolio, extra tool boxes, complete tool equipment, including some specials, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make an offer. Box 71, care MOTOR AGE.

FOR SALE—Packard Model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,00 0if taken at once. Bates-Odenbret Auto Co., Milwaukee, Wis.

1905 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror lens headlights and generator; baskets, autometer, electric light for gauges. Address Box 267, Portland, Me.

Scrap Auto Tires

We Buy Them

LAUN-CARLSTEN CO., 90 Metropolitan Blk., Chicago

FOR SALE—Cadillac, 1904 Model "A;" tonneau; newly painted; guarantee good condition. Capen Motor Car Co., St. Louis, Mo.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 20 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, $75; cost $150. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—Party to take interest in good paying business; must be able to invest from $1,000 to $2,000; must be capable of doing office work. Address Ress & Co., top floor Pratt Block, Kalamazoo, Mich.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

BARGAINS while they last. New 2 H. P. marine engine, $60; new 6 H. P. 2-cylinder marine engine, $165; new 4-cylinder marine engine, only $300; fully guaranteed. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago, Ill.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

Christmas Holiday Excursion Rates

Via the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, at a fare and a third for the round trip, with return limit of January 3, 1906. Through train service to New York City, Boston and other eastern points. No excess fare. Individual Club Meals served in Nickel Plate dining cars. Three through trains daily from La Salle and Van Buren St. Station, the only depot in Chicago on the Elevated Loop.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price $1,000. Ralph E. Clarke, Coldwater, Mich.

FOR SALE—4¼x4 opposed engine castings; complete, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

AUTOMOBILE—Cadillac, B model; good order; cheap. The Globe Chemical Co., Court and Deercreek, Cincinnati, Ohio.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

Digitized by Google

See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

THE BILLINGS & SPENCER CO.
HARTFORD, CONN.

Your $5.00 Back

If after 30 days' trial you don't feel absolutely sure the

SKINNER COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

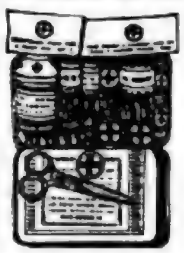
Compact, light and convenient for carrying.

$5 Express Prepaid

SKINNER & SKINNER
Mfrs.
4134 Indiana Avenue
CHICAGO

Reference: Illinois Trust & Savings Bank, Chicago

Protection for Automobilists



Sixteen articles in a metal case for everybody who is liable to injury. Bandages, Dressings, Remedies. Quality Guaranteed. Send us your address and we will send the case; if you are satisfied after examination, send us one dollar; if not, return the case at our expense. Every automobilist ought to have one. Send for circular.

U. S. Emergency Case Co.
11 Weaver Bldg., Utica, N. Y.

OLD Tires Made NEW

New Tires Made Puncture-Proof

NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.

1203 Michigan Ave., CHICAGO, ILL. Tel. South 1381
ST. LOUIS, MO.

LEA TIRE PUMP

Saves tires—gauges pressure and inflates evenly. Saves you—does away with backache and "short-windedness." Write for descriptive book B. Inquire for our proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

HYATT ROLLER BEARING CO.
Harrison, New Jersey

ARE YOU FROM MISSOURI?

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co., 85
Adams Company, 76
Ailland Motor Co., 84
American Battery Co., 83
American Coil Co., 78
Apperson Bros., 76
Aster Company, 82
Atwood Mfg. Co., 40
Austin Automobile Co., 74
Auto Brass & Aluminum Co., 85
Auto Directories Co., 85
Auto Owner Publishing Co., 72
Automobile Equipment Co., 83

Badger Brass Mfg. Co., 38
Baker Motor Vehicle Co., 50
Baldwin Chain & Mfg. Co., 77
Ball-Fintze Co., 83
Bausch & Lomb Optical Co., 80
Beaver Mfg. Co., 70
Berkshire Automobile Co., 70
Billings & Spencer Co., 88
Blomstrom, C. H., Motor Co., 48
Borbein, H. F., & Co., 80
Boston Auto Gage Co., 81
Bowser, S. F., & Co., 85
Brennan Mfg. Co., 75
Briscoe Mfg. Co., 83
Brown, W. H., 79
Brown-Lipe Gear Co., 67
Buckeye Mfg. Co., 58
Buckeye Wheel Co., 77
Byrne-Kingston & Co., 62

Cadillac Co. of Illinois, 84
Cadillac Motor Car Co., 51
Canedy, Earl, 85
Carbondale Chemical Co., 85
Champion, Albert, Co., 83
Coey, C. A., & Co., 84
Continental Caoutchouc Co., 61
Continental Engine Co., 77
Continental Motor Mfg. Co., 86
Coope, C. W., Co., 82
Corbin Motor Vehicle Co., 39
Correspondence School of Auto Engineering, 75
Corwin Mfg. Co., 70
Cramp, Wm., & Sons Ship & Engine Building Co., 78
Crawford Automobile Co., 51
Cullman Wheel Co., 82

Daimler Mfg. Co., 56
Dayton Electrical Mfg. Co., 85
Dayton Motor Car Co., 53
Diamond Chain & Mfg. Co., 82
Diamond Rubber Co., 81
Dietz, R. E., Co., 69
Dixon, Joseph, Crucible Co., 83
Dyke, A. L., Auto Supply Co., 86

E. H. V. Co., 64
Eclipse Buggy & Mfg. Co., 85
Edmunds & Jones Mfg. Co., 73
Eldredge Electric Mfg. Co., 85
Electric Storage Battery Co., 79
Electric Vehicle Co., 67
Electric Speed Meter Co., 71
Elmore Mfg. Co., 43
Excelsior Supply Co., 84

Fairmount Engineering Works, 84
Fellwock Auto Top Co., 85
Firestone Tire & Rubber Co., 65
Fisk Rubber Co., 66
Ford Motor Co., 37
Franklin, H. H., Mfg. Co., 31
Frazier, W. S., & Co., 86

G & J Tire Co., 52
Gabriel Horn & Mfg. Co., 80
Garford Company, 77
Garlick Auto Prop Co., 82
Gauss, L. T., 80
Gilbert Mfg. Co., 85
Gilbens Bros. Co., 84
Goodrich, B. F., Co., 54
Goodyear Tire & Rubber Co., 60
Gray & Davis, 82

Ham, C. T., Mfg. Co., 75
Hardy, R. E., Co., 80
Harris, A. W., Oil Co., 79
Hartford Rubber Works, 55
Hartford Suspension Co., 83
Hayes Mfg. Co., 78
Haynes Automobile Co., 52
Herz & Co., 80-86
Hofeller Brass Fdy. Co., 86
Holley Bros. Co., 84
Hyatt Roller Bearing Co., 88

Imperial Brass Mfg. Co., 76
Importers Co., 84
Jackson Automobile Co., 59
Jeffery, T. B., & Co., Cover
Jones Speedometer, 81

Kimball, C. P., Co., 81
Kirchberger, M., & Co., 73
Knublock-Heldeman Mfg. Co., 82
Knox Automobile Co., 74
Kokomo Rubber Co., 69

Leather Tire Goods Co., 85
Lehman Bros., 74
Lester, E. F., 85
Lexington Hotel, 78
Light Mfg. & Fdy. Co., 78
Link-Belt Machinery Co., 58
Lobee Pump Co., 84
Locomobile Co. of America, 45
Logan Construction Co., 87
London Auto Supply Co., 82
Long Mfg. Co., 80
Lozier Motor Co., 42

McClelland, Chas. P., 82
McCord Co., 82
McDuffee Automobile Co., 84
Madison-Kipp Lubricator Co., 82
Marion Motor Car Co., 47
Marlborough Hotel, 72
Matheson Motor Car Co., 68
Mead Motor Co., 84
Merkel Motor Co., 76
Michelin Tire American Agency, 63
Miller, Chas. E., 67
Miller Signal Co., 85
Milwaukee Steel Foundry Co., 82
Mitchell Motor Car Co., 36
Moline Automobile Co., 71
Morgan, W. J., 60
Morgan & Wright, Cover
Motor Car Equipment Co., 77
Motor Car Specialty Co., 88
Motor Car Supply Co., 81
Mutty, L. J., Co., 85
Myers-Dayton Top Co., 82

National Motor Vehicle Co., 62
National Spring & Wire Co., 82
Neustadt Auto Supply Co., 76
Newmastic Tire Co., 88
New Process Rawhide Co., 78
N. Y. & N. J. Lubricant Co., 85
New York Gear Works, 83
Nicholsberg, H., Mfg. Co., 83
Nordyke-Marmon Co., 55
Northern Mfg. Co., 64

Oakes & Dow Mfg. Co., 72
Olds Motor Works, 41
Oliver Typewriter Co., 79
Owen Chemical Co., 85

Pacific Tucking & Mfg. Co., 68
Packard Electric Co., 82
Packard Motor Car Co., Cover
Pardee-Ullmann Co., 84
Pedersen, J. T., 85
Pennsylvania Rubber Co., 57
Pennsylvania Ornamental Wire Co., 78
Pierce, Geo. N., Co., Cover
Pittsburg Reduction Co., 85
Pittsfield Spark Coil Co., 68
Pope Mfg. Co., 50
Premier Motor Mfg. Co., 54
Prest-O-Lite Co., 68

Railway Appliances Co., 85
Rainier Co., 62
Rajah Auto Supply Co., 83
Reo Motor Car Co., 67
Rhodes, J. H., & Co., 82
Robert Instrument Co., 84
Rose Mfg. Co., 86
Royal Battery Co., 67
Royal Motor Car Co., 72
Rubay, Leon, 85
Rubber Goods Repair Co., 84
Rushmore Dynamo Works, 56-57

St. Louis Motor Car Co., 83
Saks & Co., 86
Schrader's, A., Son, 50
Scoville & Peck Co., 76
Shawver Co., 85
Shelby Steel Tube Co., 83
Skinner & Skinner, 88
Spicer Universal Joint Co., 80
Spitzdorf, C. F., 75
Springfield Metal Body Co., 85
Standard Roller Bearing Co., 82
Steel Ball Co., 73
Stevens, J., Arms & Tool Co., 33
Stitch-In-Time Vulcanizer Co., 82
Stoip Mfg. Co., 77
Strelt, A., Machine Co., 76
Supplementary Spiral Spring Co., 79
Swinehart Clincher Tire & Rubber Co., 73
Syracuse Aluminum & Bronze Co., 79

Temple, Ralph, 84
Thomas, E. R. Motor Co., 46
Thompson, Chas. A., Co., 79
Timken Roller Bearing Co., 61
Tingley, Chas. O., & Co., 86
Trebert Gas Engine Co., 69

U. S. Electric Sign Co., 82
U. S. Emergency Case Co., 88
U. S. Jack Co., 82

Veeder Mfg. Co., 77

Wabash R. R., 86
Waltham Mfg. Co., 60
Warner Instrument Co., 69
Way Muffler Co., 44
Wayne Automobile Co., 34-35
Weber, O. F., Co., 84
Weed Chain Tire Grip Co., 78
Weiss, Mat, 86
Welch Motor Car Co., 81
Western Tool Works, 74
Wheeler & Schebler, 50
White Sewing Machine Co., 53
Whitlock Coil Pipe Co., 76
Whitney Mfg. Co., 79
Willard Storage Battery Co., 75
Willis, E. J., Co., 85
Winton Motor Carriage Co., 29
Witherbee Igniter Co., Cover
Wolverine Auto & Commercial Vehicle Co., 71
Wray Pump & Register Co., 71

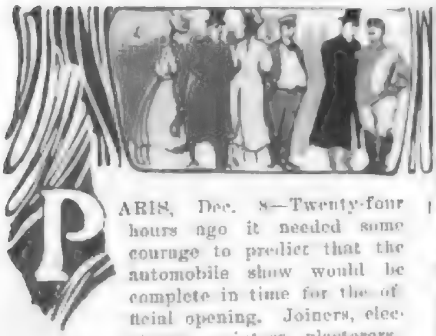
When Writing to Advertisers, Please Mention Motor Age.

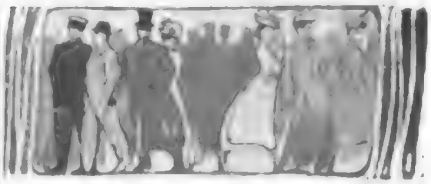
Digitized by Google

MOTOR AGE

VOL. VIII NO. 25 CHICAGO, DECEMBER 21, 1905 $2.00 Per Year

SALON THE MAGNET IN FRENCH CAPITAL





PARIS, Dec. 8—Twenty-four hours ago it needed some courage to predict that the automobile show would be complete in time for the official opening. Joiners, electricians, painters, plasterers, and laborers filled every portion of the vast building. Not a stand was finished. Some had not even got the name up, others were being painted; on one stand an army of women were busily sewing carpets, on another an indignant attendant was indignantly sweeping the mud off his red carpet, only to find that it was put on again by the constant stream of passing workmen as rapidly as he took it off. But **it is indeed one of the marvels of the Paris salon that when you leave it at night swearing that it will not be ready for the following morning, you come back to find that a sudden transformation has taken place, and instead of workmen, disorder and incompleteness, there are beautiful women, frock-coated men, stands that should be called drawing rooms, and automobiles so perfectly polished, so beautifully painted, that it appears sacrilege to think of taking them on muddy roads.**

Outside, as well as inside, there is the utmost lavishness of decoration and illumination. Externally, the whole of the outline of the building is illuminated; a searchlight flashes from the corner of the Champs Elysées, bands of fire are festooned from column to column all round the palace, while there are double bands of light across the annex by the side of the river, where, in its big glass house, the commercial section of the show is exposed. This building, too, is outlined with electric lights, and viewed from the opposite bank of the river, gives almost as brilliant an effect as the more gorgeous main building. Inside there are 200,000 electric lamps, 100,000 of which form the decorative scheme under the cupola. In the rotunda is a magnificent raised flower bed, which turns out to be composed entirely of lectric lights.

WHERE THE GLADIATOR IS SHOWN

In the whole show there are only two inartistic signs, one an impossible sort of a painting representing a bicycle hub, and another a huge negro's head; fortunately, both of these are out of the way. Today the crowds were as large as ever before.

PARIS SHOW BUILDING A DAY OR SO BEFORE THE OPENING

There are 133,333 square feet in the Grand palais; it is the utmost that can be obtained, even with the greatest economy of space, and every inch of it is occupied by the 1,000 stands. There is a bigger building in Paris, but it is a hall and not a palace, and so long as the exhibition remains a salon, and not a mere show, the Grand Palais will continue to be used. On a first day's visit it is difficult to study closely the numerous models exhibited and one has to be satisfied with generalities. There is a notable increase in the number of new firms, especially small manufacturers making small runabouts, and to judge from this year's indications this type will not continue to be neglected in France. **The big firms all continue to construct high-power cars, but there are several among even these who are now showing cheaper-priced machines. Steam is not much in evidence, Serpollet and Chaboche being about the only two representatives.**

Foreign firms are showing well, several of them having obtained large central stands. The Itala and Fiat have the biggest shows, the former having one of the most costly stands in the exhibition, where tall, imposing footmen in green and gold livery, who could not distinguish between a spark plug and a crankshaft, awe one by their presence. English firms are well represented, Wolesley, Giddeley, Argyll and Napier, as well as several minor firms, all having stands.

America is represented by the Cadillac, the Electric Vehicle Co, where Columbia gasoline and electric cars are shown; the Oldsmobile, the American Locomotive Co., and, in the industrial section, by Pratt & Whitney, and Brown & Sharpe, machine tool manufacturers. Germany has its Mercedes, and, as usual, it seems to be the parent of all the other big cars in the show, so much has it been copied from this machine.

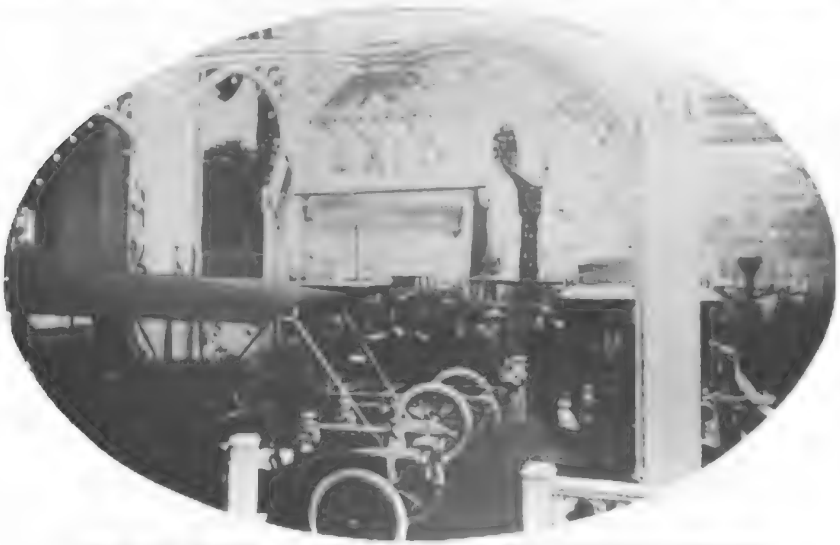
Digitized by Google

MAGNIFICENT DECORATIONS AT THE STAND OF THE FIAT, ITALY'S LEADING MAKE

The industrial section of the show, which is housed apart from the main building, consists of heavy wagons, machine tools in motion, engines in motion, automobile boats, and a very small collection of flying machines. So far as can be judged from a first day's visit this section will be one of the most interesting in the show

A great novelty outside the exhibition is a motor omnibus service which has been inaugurated especially for the salon. The buses, which include a de Dion-Bouton, Peugeot, Kriéger, Gobron-Brillié and Mors, run between the stock exchange and the show at the same fares as the horsedrawn vehicles. At the terminus as many as 400 and 500 people gather round the buses in the vain attempt to get a seat.

But what is it that most attracts one's attention at this greatest of all exhibitions of the motor car? The beautiful decorations, myriads of fashion's leaders and countless social functions that appear to fill every moment, are mere secondaries—the magnet is the car for next season, its innumerable parts, unnoticed to the casual observer, but so finely differentiated by the skilled Parisian motorist that the slightest change in vaporizer, control or adjustment does not escape his searching glance; the new methods of driving direct on top speeds, or the minutest alterations in motor displacements are all noticed, and it is not surprising the motorist lays aside his hat and gloves and cane to peer deeply into a new design of gear change box, to trace the intricacies of fresh steering wheel control or to test the workings of new brakes.



ONE OF THE EXHIBITIONS—GEORGES RICHARDS'—THAT ATTRACTED ATTENTION

It is beyond the bounds of possibility at this early stage in the progress of the grand salon to say in which part of the chassis construction the greatest progress has been made, but in not one single detail in motor car build is stagnation apparent. The inventive, experimenting, restless French designers, and those from adjacent countries, have not been content to leave one part of the car exactly as it was a year ago. In many ways the general design remains unaltered, convincing proof that present efforts are along the proper road and will, unless something untoward occurs, lead to the eventual goal. But from cooler to driving axle little alterations—those that might be expressed in the third or fourth decimal places—are found. Nevertheless these changes are interesting, for in not a single case are they foolishly made. Neither for innovation nor uniqueness have these been made, but that the completed car may be a better

Digitized by Google

proportioned whole, with all parts more properly related to one another and with the finest construction in each.

Pressed steel in frame work rules supreme, but finer workmanship appears. One-piece construction is the ambition of many makers, and whereas a few years ago the Darracq was supreme with its mysterious make, having side, cross and motor support parts all in one piece, without visible union, other firms like the Decauville and Clement-Bayard are using similar construction. In these frames, webs from the side pieces, with graceful downward curves, serve as supporting arms for the motor box and gear box. They also prevent the splashing of mud on the machinery. Other makers, while not using the one-piece design, combine single, double and in a few cases triple curves in each side piece. The connoisseur is not surprised in discovering in each side piece an offset along the motor to increase the turning angle of the front wheels; or an upward offset over the back axle to afford greater spring resiliency; or short upward curves where the jackshaft is carried.

Mercedes, Mercedes, Mercedes—it is almost nothing but Mercedes when change speed gears are examined. Of course it must not be expected that exact designs of the parent German company are duplicated, but in most of them a touch of the German lines is evident and one cannot imagine he is in proud Paris, the home of French ideas, or that the events of the war of 1871 are still a part of history. In spite of these, good features are imitated

FLORENTIA CARS SHOWN IN A LARGE AND ATTRACTIVE SPACE

and nearly all of the big houses have the selective system of changing speed in use on one model at least. Daimler machines still use the four forward speeds, with several sliding gears, all, however, operated through one lever working in a three-way sector. This year the gears are strengthened and the main shaft is furnished with a bearing in the rear of the bevel pinion that works in the differential bevel. The use of four forward speeds has not been deemed an essential by many makers, three being preferred owing to the extreme elasticity of the motor. By varying the speed quite as good running results are obtained as by using the fourth speed. The reverse idler that has for so long been a source of contention still holds on, and although many makers have it revolving only when in use a few are satisfied that the power required to drive it when idle is immaterial compared with the additional intricacies necessary in moving it in and out of engagement with the other

COMPREHENSIVE EXHIBIT OF PANHARD & LEVASSOR, WITH STANDS OF OTHERWELL-KNOWN MAKERS IN THE DISTANCE

Digitized by Google

ATTRACTIVE DISPLAY OF THE OLDS MOTOR WORKS, OF DETROIT, MICH.

gears. The carrying of the gear box by the top part has not so many disciples as was looked for. This manner of support has the advantage in assembling that all gears can be taken out by dropping the bottom part and not interfering with the alignment of the parts, but so rarely is the box dissembled that the point loses its merit. Ball bearings are universal on both shafts, rollers are seen in very few cases, plain bearings rule in heavy commercial machines and a comparatively few heavy touring machines, but 1906 is to be a season for ball bearings.

Will it be shaft or chain drive to the back wheels? The Frenchman cannot answer you this question at present, nor can the present Paris salon. Both appear and it would seem that leading makers, like the house of Panhard & Levassor, in using both drives, are experimenting and trying to settle the question to their own satisfaction. The Mercedes still retains the double chains but, like others, is carrying the gear box further to the rear, thus placing the differential jackshaft closer to the rear axle and shortening the length of the drive chains. Shaft and chain each has a good following. Richard-Brasier, Fiat, Germain, de Dietrich, Berliet, Peugeot, Brohut, Motobloc, Delahaye and a score of others remain faithful to side chains, whereas Renault, Opel-Darracq, Darracq, Decauville, de Dion-Bouton, Clement, C. G. V. and others resort to the shaft, with its universal joints. In the Hotchkiss a very long cardan shaft is used, unsupported throughout its length, and not relieved of strain by an accompanying torsion rod; in the Clement-Bayard a comparatively short shaft serves; an equally short shaft suffices in the Thornycroft, an English make exhibited, but in this car an assisting torsion rod is found.

One cannot help noticing that the floating type of drive axle is used in many machines. By this axle the outer casing enclosing the driveshaft from the differential to the road wheels carries all the weight of the back part of the car, the shafts themselves only driving the wheels. Where this is used the axle housing must be well supported, which in nearly every case is done by heavier casings rather than by truss rods, which the French enthusiast asserts injures the appearance of the car. The Aries uses a novel method of support. This car has a double axle, one an inverted arch from wheel to wheel, which has on either end a hollow sleeve on which the road wheel revolves. Resting in the arch is a horizontal driveshaft with its differential casing reposed on the center of the dropped part. The driveshafts passing through the hollow ends are connected by lock jaws with the road wheels. The axle looks heavy; the clearance in no place is greater than that beneath the differential.

Frames, shaft and chain drives, rear axles, springs and steering gears are necessaries. They must be of sufficient strength for all emergencies, but everybody is after speed and speed reposes in the motor and its accompaniments. What part of this is most instrumental in giving a 70-mile-an-hour speed remains unanswered, but if engineers and designers can do it and if refinements in finish will bring this about, perfection may be looked for in the near future. With some makers casting cylinders in pairs, or separately, or in one piece, seems the point to be attained. C. G. V. cars have a one-piece motor, the head a rectangular casting and the cylinders separated. For this the makers claim parallelism of bore in all four cylinders, equal cooling of each and perfect alignment on the crank box. Panhard-Levassor, in their leader, a six-cylinder car, have each cylinder a separate casting with wide space separating each. The Itala has its cylinders arranged in pairs. So has the Mercedes, Gobron-Brillie, Peugeot, Thornycroft, Bianchi, Gladiator, Argyll, Napier, Spyker, Chenard-Walcker, de Dietrich and Motobloc, whereas single-cylinder castings remain in such machines as the Germain, Aries, Clement-Bayard and Delahaye. It is now possible to cool cylinders whether in pairs, single or as one unit, and the points of argument reside with a question of alignment. Crankshafts are invariably turned and ground and revolve on three or five bearings in most four-cylinder machines. Plain bearings rule almost absolutely in this part of the motor, a few makers, of course, using balls in smaller-powered machines. The boring of the shaft throws in order to lubricate the lower connecting rod bearings is not widely followed, most designers holding that the splash serves for this.

Admission and exhaust valves on the right side, or inlet and exhaust valves on the left side, or both together on the right or left side, is a query that is being fairly positively answered by the show. One thing is certain—the method of placing valves direct in the cylinder heads and resorting to an overhead shaft with cross arms for opening and closing the valves has not much of a following and cannot be considered. Last, or rather this year, many makers followed the Mercedes fashion in disposing the admission valves on one side, preferably the right, and locating the exhaust valves on the left, using

BIG LINE OF THE MOTOBLOC

ITALA COMPANY SHOWS RACING CAR

Digitized by Google

UNDERBERG & CO.'S EXHIBIT

vo camshafts, one for actuating each set. his is not followed for 1906, the tendency eing unmistakably to place both sets side y side in the bottom of ports on one side f the motor and to use only one camshaft. implicity in motor build has compelled . Everybody asks for simplicity, simlicity, simplicity, and naturally the aker must give simplicity. Putting both ts on one side calls for enlarged valve oxes to insure proper diameter of valves nd prevent heating.

It must not be taken that all cars are ade on these lines—far from it. Particurly where make-and-break ignition is ed are the admission valves placed oppote to the exhaust valves. To decrease ie size of its ports the Daimler house akes them with a taper toward the base, iving a triangular effect. The Itala has iem disposed on opposite sides and makes iem as square and as angular as posble, with the make-and-break mechanism rectly on the top of the ports. In the otobloc it is difficult to distinguish valve rts, as the water jacket is almost circur around each pair of cylinders.

Aspirators, carbureters, vaporizers, mixs or by whatever name they are known, and foremost in the novelty row, many them being so unique and yet not sufciently tested that the exhibitors hesitate out stating whether or not they are regar equipment for the coming season. The aimler house shows its novel four-jet degn. The float is placed separately and nnects with four vertical aspirating tips, ch of which is in a separate compartent, with separate pipe connecting rough a throttle with the admission lves. In starting only one aspirating is used, and when it is accelerating is is cut out and, one at a time, the reaining three are brought into use. A gle throttle does this combined work cutting out and introducing and it is ticeable that this throttle is, at the int of union of the admission pipes, conecting with each pair of cylinders. In e Aries vaporizer a bypass is operated rough a piston valve in the mixing amber, so that on low speeds all the air passes the aspirating tip, but with acceleration the piston on rising opens the bypass ports, permitting air to pass direct to the cylinders without traversing the aspirating tip. The Renault uses a design of multiple type aspirator with four vertical aspirating spraying tips side by side, each taking its fuel from a common pipe. But surrounding the four is a barrel throttle with a four-step opening. It cannot be said that the auxiliary air valve is as popular as heretofore, the designers prefering other methods of regulating the mixture supply.

The common practice is to place the throttle control on the steering wheel, and to use an accelerator as a push bar in the body floor. Governors are still connected with the throttle. Water jackets remain as a year ago; in fact, it might be concluded that they are gradually disappearing, a better disposition being to carry the carbureter very close to the admission valves and use only a short piece of large piping to each set of cylinders. Carrying the carbureter in this position calls for feeding the gasoline by pressure from the exhaust or from a small pump. It must not be overlooked that a few makers have attachments on the dash by which the spraying tip can be adjusted by hand. This at first glance appears an added necessity, but experience seems to indicate that instead of leaving the carbureter to take care of its own fuel and air supply, the makers feel that by attending to it, seeing that more fuel is furnished on high speeds and less fuel when going slow, much more power is obtained from the motor.

A few years ago double sets of ignition met with laughs and sneers from many of the spectators. They have learned, however, that two sets are none too much when one gives way on a long tour. Now many machines use make-and-break mechanism supplied with current from a positively-driven magnet and have fitted regular spark plugs and carry accumulators for providing the current in case of magnet troubles. Hotchkiss machines use only a high tension current, furnished by a magneto. In the Mercedes and Fiat

[MODEST DISPLAY OF THE CLEMENT CONCERN

make-and-break remains; both high and low systems are in vogue on the Peugeot; the de Dietrich prefers the low only; in the Decauville are two sets of spark plugs, with current for one supplied from a high tension magnet and for the other from accumulators. The Renault has its low tension magnet placed crosswise, driven by helical gears; the Delahaye uses a double system, with a Simms-Bosch magneto furnishing current for the make-and-break system; in the Metalurgique a similar dual arrangement is adopted; in the Thornycroft low tension remains; Rochet-Schneider is the same, and throughout the entire salon the story continues—either high or low tension with magneto, or one or the other with accumulators for reserve. A few makers place importance on the controlling of the motor speed more from the spark than the throttle, but they are greatly in the minority. It remains common practice to interconect the throttle with the clutch.

DE DION-BOUTON CARS DISPLAYED UNDER A CANOPY OF LIGHTS

Digitized by Google

MOTOR AGE
309 Michigan Avenue
CHICAGO
Published every Thursday by the Trade Press Co. N.H. Van Sicklen Manager. Telephone Harrison 4410
Subscription two dollars per year. Foreign subscription four dollars. The Western News Co. of Chicago and its branches supply newsdealers. Entered at the Chicago postoffice as second class matter.
New York Office 29 West 42nd Street, London Office, American Publication Bureau 58 Manor Park Road, Harlesden N.W. Member National Association of Automobile Manufacturers, Chicago Trade Press Association and Official Organ of the American Motor League.

STYLE NECESSARY FOR LIFE OF TRADE

PERIODICALLY for some time the matter of distinguishing a maker's certain model by the year of production has bobbed up, only to be forgotten in the rush of factory work and designing of a new lot of cars about to be brought out. The question has again come to the surface, evidently with a view of settling the matter one way or the other for all times.

Many who have had any views on the subject have been of the opinion that it is a mistake to produce a new car each year and to determine its model by the the year in which it sees the light of day, a majority preferring to make the improvements with each batch of cars put through the factory.

There has been argument both for and against this proposition. Some makers have adopted the plan of making improvements when they thought necessary and at no other time; when they thought it desirable the previous year's models have been retained. The majority, however, feel it is reasonable and sensible to change models each season, and it is likely this plan will continue for a number of years —until there is a settlement as to what is good construction and good style in automobiles.

It may well be pointed out that in almost all lines of trade style regulates the production. It is seldom a man wears a hat or an overcoat or a suit so long as to destroy its usefulness. Styles will not permit him to continue to wear a garment until it is useless as a means of covering nakedness; nor would a person desire to associate with such a clinging friend, no matter how good it might be.

If the Easter trade in women's headgear had to wait for hats to wear out it would be compelled to go out of business; if in the days of cycling a man bought a new wheel only when his old one had been worn into uselessness [illegible] would have been sold, and the [illegible] quite as well in the automobile [illegible] any other line.

It is true a manufacturer [illegible] to make new tools and to do [illegible] ingly unnecessary work in [illegible] der to keep to the front in [illegible] matter of fact the buying [illegible] ciates the up-to-date man, whether he is an automobile maker or a garment maker. There is always a market for something that is different in style, even if it is a rehash of some fashion that prevailed a decade or more before. The dealer who handles the out-of-style garment is not the one having the best trade and is not the one showing the most prosperity.

Ever changing styles are what keep up the great commercial system of the country and give employment to hundreds of thousands of people, who prove factors in turning over the currency of the country and keeping it in circulation. Style is absolutely necessary for the life of trade —quite as much as anything else that can be named. As a matter of fact, probably outside of foodstuffs, nothing is as important a factor in the world's trade as style.

Were automobile manufacturers to disregard the demands of fashion, except occasionally, there is every probability that the automobile owner would prove a better patron of the paint shop than of the automobile dealer. The owner would have no incentive to purchase a new machine as long as his old one could be made to look like his neighbor's car, fresh from the factory. There could be no object in the change except a desire for more power, or unless a machine had proved so worthless as to put the owner in the class of non-owners. Present day machines, even the poorest on the market, however, preclude the probability of such a condition.

To do away with seasonable models would mean the end of automobile shows; the end of cycle shows was largely responsible for the end of the popularity of cycling. It would naturally follow that there would be improvements, both in manufacture and in styles, but styles are seasonable affairs and must naturally be such in order to influence the market, as they do in all lines where they are changed once or twice a year.

The argument that there should be no season, so that manufacturers could work their factories at any and all times, can have little weight. As a matter of fact a well regulated factory works all the time now, with the experimental department a year or so ahead of the other departments. There need be no delay in producing if a factory is well operated, if the designers are up to snuff and if the management is intent upon producing not only the best and the latest, but in having the product on the market to meet the demand.

Would there be any particular saving were the season model to be abandoned and the car be known only by number? It is true an apparent saving might exist for a time, but alterations would have to be made to keep up with the times, and new jigs, templates, tools and dies would be necessary, with quite as much expense in the end. It is doubtful if there could be a material saving in the manufacture of cars from this change alone, but time will doubtless alter methods of manufacture and selling, so that there will be savings that at present seem impossible.

PUBLIC INTEREST IN AUTOMOBILE SHOWS

PARIS is wild with excitement over its salon de l'automobile—from 15,000 to 25,000 people attend the exhibition daily. It is not at all strange that Parisians should be excited—that is their usual state. But it is small wonder they should go into ecstasies not only over the splendid French, German, Italian, English and —modestly—American automobiles, but over the superb decorations in the Grand palais and in the individual booths occupied by the cream of the world's automobile constructors. The elaborateness of the 1906 salon is almost beyond description, either by printed word or illustration; in fact, the exhibitor at the salon has attempted to outdo his neighbor in [illegible] quite as much as he has in dropped part [illegible] constructing automobiles, through the [illegible] folly to suppose that all of look jaws wit[illegible] 20,000 daily visitors to the looks heavy; [illegible]e to inspect automobiles greater than [illegible] of placing orders. The Frames, sh[illegible]w is the thing now and the axles, springs [illegible] are take in whatever is on the style boards.

The thousands of people who attend automobile shows have little intention of buying immediately. They probably would like to be included in the list of the fortunate ones, however, and they are interested to the extent that at some future date they may be with the rest of the people.

This but illustrates the trend of affairs; it shows the public pulse; it gives some idea of the possibilities of the motor car trade. It also proves most decidedly that the masses are not so antagonistic toward automobiles and automobilists as the few calamity howlers would make it appear; it proves that where there is one opposed to the automobile there are a dozen to stand up for it.

What the business is coming to may be judged from the fact that the French show management, knowing the public's desire, made provision to keep the doors open for a period extending over 2 weeks, in order to give everybody an opportunity to see the show. The French management was far-seeing. New York will have two shows; they will be packed daily. Chicago will have a week and all Chicago and the west will attend if the buildings will hold the crowds. All the prominent cities in the United States will hold shows; all will be crowded to overflowing.

Yet there are a few motorphobists and their howl is long and loud.

Digitized by Google

That speedway story is getting to be almost as familiar as the sea serpent tale.

That the French automobile show opened with the usual accompaniment of French excitement.

There will be at least one consolation about the forthcoming shows—most of the surprises have been sprung already.

The French exhibitors ought to go the Englishmen a few better in the reports of big show sales, now they know the English figures.

An Indiana doctor who said automobiling is a cure for indigestion probably had the editorial writers of the Chicago Tribune in mind when the statement was made.

Now that Megargel has completed the worst part of his trip across the country and back, probably there are many willing to take the car over the last half of the journey, which is to be through decent climates for a while.

The Philadelphia automobilists seem to be up against the real thing to be compelled to take out both city and state licenses. Now that the federal government is thinking of getting in its work, what does the Philadelphian think? For once he will have to move.

As an excuse for not permitting their cars to be closely inspected at the Olympia show, the French makers will probably say there were too many good new things to be stolen to permit the public to rubber too closely. Or is it possible that one French maker was afraid of the next door French maker alone and not the English and American makers?

Nobody need worry—old Dame Fashion will have something to say about automobiles just as long as the dear members of the fair sex brigade have anything to do with automobiling.

The holding of the English and French automobile shows before the holiday season is a pretty good indication that another season the American makers will follow suit. In other words, the year 1906

Arguments heard in case of Automobile Club of Philadelphia against city in mix up over state law, decision being reversed.

Britons find fault with excessive fees demanded by the Automobile Club of Great Britain for tire test next February.

Percy Megargel and D. F. Fassett nearly perish in snow near Flagstaff, Ariz., being rescued by searching party.

Many pleasure parties planned for winter racing circuit, full attendance of world's best drivers being promised.

Belief expressed in Great Britain that not many English firms will be represented in the French tour.

Grand prix to be run over course at Aix-les-Bains, France deciding it will have road race.

French runabout test decided in favor of Vulpes car, last day of run counting.

International conference decides there shall be no Bennett race in 1906.

French show continues, record-breaking attendance being reported.

Reports show that St. Paul carnival last summer made $337.05.

Automobile Club of Pittsburg secures option on site for club house.

is apt to see four New York and two Chicago shows.

Shows appear to be alike the world over—nothing ready a few hours before the opening and completeness in the extreme at the hour set for the admission of the public.

Now the tide has turned; instead of Americans stealing ideas from the foreign makers the foreigners are picking up some helpful little bits in American automobile construction.

Chicago's license numbers now exceed 3,500 and it is predicted these figures will be doubled before the summer of 1906 has passed. All of which will prove consoling to some of the howlers, no doubt.

Webb Jay says it doesn't take skill or nerve to run an automobile on a beach; that it is on a track where these requisites come into play. It also takes some skill to keep a machine on the track, as Webb probably knows.

By the time the automobile associations and the motorists at large are well at work hammering Congressman Morrell's bill for the interstate commerce commission's control of automobiling, the congressman will begin to realize how unpopular he really has made himself.

If the forecaster keeps on dealing out snowless weather it will be pretty hard to tell when the 1905 season leaves off and the 1906 season begins. As it is the fur dealers have had no snap and the Standard Oil Co. has been doing about as much business in gasoline in December as at any time of the year.

CAUSES FOR SCORCHING AND MOTORPHOBISM

At last the great truth is out; the trouble with the motorphobists and the cause of the desire to scorch have been discovered. The scorcher is not to blame for his shortcoming any more than is the motorphobist for his. The cause in one case is diametrically opposite to that in the other. It was a doctor who discovered the ailment of the motorphobist and the cause of the itching to scorch. The doctor lives in Indiana, but that is not so much against him. This is what he says: "Mental depression can destroy entirely the effect of food and cause digestive disorders of the gravest nature," said Dr. McCaskey. "Recreation has a most beneficial effect, and the desire to go to a restaurant after witnessing a pleasing performance at some theater is due mainly to the effect of having one's mind relieved and influencing the flow of digestive fluids. For recreative effects most persons need some sort of diversion, which contains fast motion, and this explains the popularity of automobiling, the beneficial effects of which I know by experience."

All of which sounds pretty good to the automobilist even if it does not set well in the stomach of the motorphobist—nothing would rest easily there. The motorphobist newspaper man is not to be blamed for his work; he is suffering. Dr. McCaskey said so, after he had made a careful analysis of the case.

The newspaper man and the non-owner of an automobile who growls about speed and automobiles and other things, need recreation to rid themselves of that depressing spirit which is occasioned by being shut up and apart from men and the world. They need good long rides and a few draughts of pure country air to relieve their minds of the little burdens they carry.

They need recreation, and good, kind automobilists ought to waste a little time taking them out where these things may be found. Medicine is not pleasant to take, but it does one good sometimes, and automobiling is about as pleasant medicine for a good many ills as one can find.

Digitized by Google

PLANS FOR WINTER CIRCUIT

Easterners Taking as Much Interest in Racing as They Are in Shows—Pleasure Parties Going to Florida and Cuba—Americans to Fight For Beach Honors

New York, Dec. 17—The annual winter southern racing circuit shares with the coming shows the attention of both tradesmen and laymen in New York. The early bookings for places on the trains leaving this city on Saturday of show week and on the Sunday following, by their number prove that interest in the Ormond-Daytona meet is not only unabated, but that the promise of a general participation by foreign cracks and more American entries has given it a big impetus. Mr. Stratton, of the Seaboard Air Line, says that advance bookings are far ahead of last year. R. E. Olds has bespoken a special car for a party of ten, which, after Ormond, will take a boat ride down the Halifax and Indian rivers and then cross the Gulf Stream for tours in a motor car in Cuba and Jamaica. To accommodate his party Mr. Olds has conceived the idea of a high-wheeled trailer, after the fashion of an Irish jaunting car, carrying six people. There is such a demand now for the Reo buses that he fears one of them cannot be spared for Cuba, as was suggested to him. A. L. Kull has chartered two special cars for the Wayne racing campaign outfit and followers. James Couzens has booked staterooms for himself, Henry Ford and Dan Wurgis, and so have Harry B. Joy and S. D. Waldon, of the Packard company of Detroit.

Clifford Earp, who will pilot the Napier six-cylinder, is the first of the foreign contingent to reach this country. He arrived at Boston last week. Lancia is to come over with George H. Tangeman early in January. It is probable that Fletcher and Cedrino will go to Florida this week, the former with the Lancia Fiat and the latter with the other two Vanderbilt Fiats, to try out the course and learn what alterations in gearing will be needed to best fit the George W. Young and Hollander & Tangeman cars for the beach sprinting campaign. Anent the other European invaders, MOTOR AGE has been told repeatedly of the great Darracq 200-horsepower aspirant for 2-miles-a-minute speed crown honors. On his return from the Paris show Mr. McWilliams will probably be able to tell definitely whether or not Hemery will come over to be its pilot. The Darracq will also be represented by the 80-horsepower car which scored 38 seconds for the mile at Cape May, recently purchased by Charley Schroeder, of Manasquan, N. J., a chum of Arthur A. Zimmerman, of cycle racing fame. If C. A. Tiletson does not succeed in getting Sisz and a new Renault racer his firm will still have a 90-horsepower flyer, to be piloted by Maurice Bernin. Mr. Massenat has gone to Cuba to look over the course. If it satisfies him it will probably mean the appearance of George Heath with a Panhard, not only at Havana but at Ormond.

Reports have it that the Italians will also be in the hunt with an Itala car, driven by Maurice Fabry, and a Zust flyer piloted by Victor Pisani.

That Uncle Sam does not propose to let Johnny Bull, Monsieur Jacques and Signor Macaroni have it all their own way is proved by Senator Morgan's correspondence and the news the writer picked up on a recent trip through the western factories. The senator says Harry Houpt, of New York, will be there with his 60-horsepower Thomas, which finished in the leading quartet in the eliminating trials. On his recent trip to New England Morgan saw Louis S. Ross, winner of the Duer cup last year. Ross is now building touring cars, but has yielded to the importunities of the Bay State Automobile Association to defend the cup by driving the racer being built by the Stanley people with this object and the 2-miles-a-minute speed crown in special view. Henry Ford will be on hand with his six-cylinder racer. Its power, he says, has been raised to 105, which he believes will be sufficient to carry the 1,700-pound car over the 2 mile course within the minute limit.

It is believed to be the intention of the White people to have on hand not only the Vanderbilt cup flyer, but Webb Jay's track sprinter as well. So far middleweight class assurances are confined to Frank Kulick and the Reo Bird and A. L. Kull's new 40-horsepower Wayne, which Deacon Holmes will drive. It is believed the Stanley people will enter a steamer and it is possible that Sidney Burman will be able to persuade M. Clement to send over a Clement-Bayard racer for the middleweight championships. Morgan has read with pleasure the stories in two of the Chicago dailies that Dr. H. E. Thomas will enter the 90-horsepower Locomobile, which finished third in the Vanderbilt race, and will pilot it himself in the Corinthian championship race.

At the Franklin factory last week no orders had yet been given to prepare any air-cooled flyers for Florida. No word, however, had yet been received from E. H. R. Green, of Texas, as to his intentions. Mr. McCutcheon says no expert can be spared from the factory to drive the Premier Vanderbilt cup candidate, and so it will not be sent. The National will be represented in the American championship race by one of the new six-cylinder touring cars, which either Carl Fisher or Jap Clemens will drive. MOTOR AGE readers, of course, have read stories of the great 200-horsepower Yankee flyer being built to carry Alfred G. Vanderbilt's colors, with Paul Sartori as its pilot. How many speed crown candidates are being quietly built without any drumbeating, only the final closing of the entries on January 8 will tell. They are beginning to come in already. George W. Young's Lancia Fiat and the Stanley candidate are entered.

W. P. Clyde, Jr., of the Clyde line, has given a $500 trophy, which has been allotted to the 10-mile free-for-all championship. Col. C. B. Ryan, of the Seaboard Air Line, and W. P. Taylor, of the Southern Railway, have also given cups.

This time there will be a grand stand erected in front of the club house at Daytona, with twenty boxes seating six each and individual seats for 250. There is now perfect harmony between Ormond and Daytona and whichever end of the beach is the better each day will be used.

There will be automobiling at Palm Beach this season. Hitherto the only vehicles on the island have been the mule car running between the breakers and the Royal Poinciana and the tricycle chairs pushed by grafters of Afric origin. The 60-mile road to Miami will be opened on January 1. This will furnish a fine drive. Accordingly, Mr. Flagler is building a garage and has ordered six White steamers for its equipment. The railroad bridge will have a 12-foot driveway added, furnishing communication between the island and the mainland. The garage will afford storage facilities also for private cars used at the beach.

Senor Conill, president of the Cuban Railway Association, will sail for Havana, next Saturday. The latest arrangement of the carnival schedule calls for a floral parade and battle of the flowers on Sunday, February 4; tours of the island on the 6th, 7th and 8th; the big race on Sunday, the 11th; and the sprint races on Tuesday, the 13th. The start of this year's Havana cup race will be from Camp Columbia to secure better communication by railroad and trolley than Arroya Arenas provides. A new road has been built from the Camp Columbia highway connecting it with the military road at a point on the outskirts of Marianao. Camp Columbia, being 7 miles nearer to Arroya Arenas than Havana, the race will be lengthened to 228 miles, made up of four relays of 57 miles each.

Morgan now purposes to make as a feature of the meet at Atlantic Beach on April 4, 5 and 6 a straightaway counterpart of the Vanderbilt contest. There being 30 miles of beach available for racing, his idea is to run a 283-mile cup race in laps of 28.3 miles to furnish a time comparison between the Long Island circuit and the Atlantic course. Such a race would require nine rightabout turns and ten were the start and finish to be in the middle of the course.

PHILADELPHIA SEASON ENDS

Philadelphia, Dec. 18—Last Friday and Saturday's snow storm was a stiff body blow to the most successful winter season the local automobile trade has ever experienced. The beautiful seemed to drive all thoughts of motor cars from the minds of prospective buyers, and the row was as dead as the proverbial doornail, for the first time since January last. The 1906 models, which were the center of attraction at the various branches and agencies for the past fortnight or more, were overlooked. Besides, the near approach of Christmas is having its effect, although there are, of course, the few who contemplate filling some loved one's stocking with an up-to-date car. It seems to be the general opinion of the habitues of the row

Digitized by Google

that the season is practically over at last, and that the 1906 rush will not put in its appearance until just before show time, in February. But satisfaction with both the past season and the prospects for the next was the keynote all along North Broad street. Indeed, there was not a single discordant note in the harmony of the song of rejoicing over the fat figures which will make next week's balance sheet the best ever. New faces still continue to put in an appearance among the ranks of the elect. The latest is the Hamilton Automobile Co., which has secured quarters at 206 North Broad street—incidentally forcing out another horse goods store.

RECOMMENDS WIDE TIRES

Syracuse, N. Y., Dec. 18—Robert E. Bogardus, county superintendent of highways for Onondaga county, after a thorough canvass of the situation, has made a report to the board of supervisors of Onondaga county which will be of great interest to automobilists. His recommendations are attracting widespread interest in other counties and will be supported by automobilists. Mr. Bogardus advises the passage of a wide tire law which would prevent the sale after January 1, 1907, of farm and truck wagons with tires less than 3½ inches wide. Wagons designated to carry heavy loads usually have tires 2½ inches wide. To adopt regulations preventing the use of these wagons which have already been paid for would be a hardship to the farmers and the superintendent thought the result would finally be obtained by preventing the sale of narrow-tired wagons after a certain date. This would also be more fair to manufacturers of wagons. Mr. Bogardus makes other regulations which are summarized as follows:

1—That an earlier date be fixed for the filing of appointments of overseers of roads.

2—That the county assume sole control of the care of improved roads.

3—That an enlarged stone crushing plant be installed at the penitentiary quarry.

4—That a state law be passed legalizing the sale of crushed stone prepared at the penitentiary to contractors engaged in building improved roads.

Even the farmers themselves admit the fairness of the rules framed by the county superintendent of highways.

CARNIVAL SHOWS PROFIT

St. Paul, Dec. 18—All members of the St. Paul Automobile Club have just received copies of the report of Secretary B. A. Ledy upon the cost of the St. Paul carnival and race meet of last July. The statement shows that with subscriptions of $6,000 and race meet receipts of nearly $10,000, the meet produced a net profit of exactly $337.95. According to Secretary Ledy's figures, the business interests of St. Paul contributed by popular subscription exactly $6,483. The race meet cost $9,278.35, and produced $9,978.59. This saved the day, as the entertainment for the small body of visitors, together with advertising, salaries of employes, and other incidentals, cost over $350 more than the amount received by subscription.

TEST COSTS TOO MUCH

Britons Think Fees Demanded for Tire Trials Are Excessive—Blow to Makers

London, Dec. 9—The conditions of the proposed tire trials of the Automobile Club of Great Britain are now beginning to receive an attention which was denied them in the rush of the show business, and considerable objection is being taken to several points which the club makes in its conditions. The first of these is the relatively high cost. This is a matter upon which little has hitherto been publicly stated, but not a little has been privately discussed. The automobile club fees have always been stiff, but the industry was one which could stand heavy taxes of an occasional character, but the benefits were obvious and the imposts have been paid without demur. But now that matters are getting into a commercial line, the question of expenses is being looked at more closely. The fees for this tire test are so set that it must be impossible for any but the wealthier firms to face them, and as the qualities of the goods of the wealthier firms are perfectly well-known, it is difficult to see what particular end is in view in holding such tests under such conditions. To show what these imposts are like they are quoted.

A set of tires is held to consist of four tires, solid or pneumatic, or hybrid, exactly as they will stand on the vehicle ready for the road. For any firm entering for these trials not fewer than five sets nor more than ten sets the entrance fee is fixed at $500 per set; exceeding ten and not fifteen $375 per set; exceeding fifteen and not twenty $300 per set; exceeding twenty and not thirty $275 per set; exceeding thirty sets $250 per set over all. These fees include the registration fees for the competition. The character of these imposts are evident on their face, and as has been pointed out preclude any but the wealthier firms from considering them. But on the other hand, these wealthier firms do not consider that the tests are calculated to recoup them for the commercial risks they run, not to speak of the costs which they will incur, for in addition to these entrance fees the competitor is bound to provide suitable vehicles for running in the competition. He is not permitted to select his tires; the officials of the club walk into his warehouse and themselves withdraw from his ordinary stock tires to the quantity represented on his entry form.

The tests are to be over 4,000 miles with an average daily mileage of 200, but at the end of 4,000 miles, it is to be then the option of any competitor to continue indefinitely on paying a fee of $10.50 per day; this is presumably to enable the trials to be run to a finish for the benefit of any competitor who thinks that his rival's tires are not lasting as well as his own at the end of 4,000 miles. There are other conditions which, while no doubt justifiable from the club's point of view, do not seem suited to a commercial venture in which road luck will have so much to say that it is an intensely speculative test from a business point of view. Thus the competitors entering bind themselves to refrain from advertising anything during or after the trials not actually and officially sanctioned by the club and at the completion of the trials the tires and the appurtenances become the property of the club. The classification for pneumatic tires is:—

A—For cars whose total running weight, including two passengers averaging 150 pounds, shall not be less than 1,500 pounds.

B—For cars whose total running weight is 2,400 pounds, including two passengers averaging 150 pounds.

C—For cars whose total weight is 3,000 pounds, including four passengers.

D—For cars whose total running weight is 4,500 pounds, including four passengers.

None of these tires will be permitted to have any protective device. A separate class is provided for tires carrying any protection outside the ordinary rubber cover. These are to be fitted to cars with total weight of 3,000 pounds and carrying four passengers. For solid tires four classes corresponding to the pneumatic classes, are projected, the weights, however, being 1,500, 3,000, 6,000 and 14,000 pounds, and no spring device in the wheel will be permitted.

The date fixed to start the trials is February 1, and unless a minimum of five sets of tires are entered by January 3 next the trials will be declared off.

WINTER SPORT IN NORTH

Minneapolis, Dec. 16—One never can tell about this glorious northwestern country. Forty years ago this week, according to newspaper clippings dug up by a local publication, the twin cities were in the grasp of a blizzard so strong that for 3 days there was no communication whatever between Minneapolis and St. Paul. Trains which started out of St. Paul to make the 10 mile run to Minneapolis were stalled midway, and stayed in the drift for 3 days, until shoveled out. Automobiling has been simply fine this winter. The roads have packed down to a fine hard running surface, there is little snow, the cold is not severe enough to freeze 'em up, and Minnesota is as much a winter automobiling locality as the majority of the middle western towns. The automobile enthusiasts have even talked of joining the winter sports class here. It was proposed to build a cinder track down through the middle of Lake Harriet, and tear off some straightaway races. But the skaters and ice boaters won't stand for the cinder track, and the automobile drivers have about made up their minds that it would be too cold for fast driving, anyhow, so the project is not likely to hold.

PITTSBURGERS SEEK SITE

Pittsburg, Dec. 19—An option has been secured on a large site near Montrose, a few miles above Allegheny on the Freeport pike, for a country club house for the Automobile Club of Pittsburg. The site is near the Allegheny river, and if the option is taken up it is probable a motor boat club will also have quarters there. The Freeport road is easily reached.

Digitized by Google

NAMES THE SPACES AT CHICAGO

General Manager Miles of National Association of Automobile Manufacturers Gives Out Allotments for Fifth Annual Exhibition To Be Held in Coliseum and Armory.

Chicago, Dec. 18—Samuel A. Miles, general manager of the National Association of Automobile Manufacturers, has completed his list of exhibitors for the fifth annual Chicago show. A few applicants have not yet qualified, but the list given out by Manager Miles is practically complete:

MAIN FLOOR—COLISEUM

Apperson Bros. Automobile Co., 96, 97.
Autocar Co., 5, 6.
Baker Motor Vehicle Co., 85, 86.
Bartholomew Co., 91, 92.
Cadillac Automobile Co., 100, 101.
Corbin Motor Vehicle Co., 83, 84.
Duryea Power Co., 13.
Electric Vehicle Co., 14 to 19 inc.
Elmore Mfg. Co., 60, 61.
H. H. Franklin Mfg. Co., 102 to 104 inc.
Ford Motor Co., 111, 112, 113.
Haynes Automobile Co., 7, 8.
Holsman Automobile Co., 95.
T. B. Jeffery & Co., 42 to 47 inc.
Knox Automobile Co., 55 to 59 inc.
Locomobile Co. of America, 48 to 51 inc.
Mitchell Motor Car Co., 80 to 82 inc.
National Motor Vehicle Co., 76 to 79 inc.
Northern Mfg. Co., 69, 70.
Olds Motor Works, 62 to 67 inc.
Packard Motor Car Co., 34 to 37 inc.
Peerless Motor Car Co., 9 to 12 inc.
George N. Pierce Co., 105, 106, ½, 107.
Pope Mfg. Co., 20 to 26 inc.
Premier Motor Mfg. Co., 93.
Reliance Motor Car Co., 94.
Royal Motor Car Co., 98, 99.
F. B. Stearns Co., 40, 54.
J. Stevens Arms & Tool Co., 27, 28, 29, 41.
St. Louis Motor Car Co., 68.
Studebaker Automobile Co., 38, 39, 52, 53.
E. R. Thomas Motor Co., 30 to 33 inc.
Waltham Mfg. Co., 89, 90.
Wayne Automobile Co., 87, 88.
Winton Motor Carriage Co., 1 to 4 inc.
Woods Motor Vehicle Co., 71 to 75 inc.
White Sewing Machine Co., ½ of 107, 108, 109, 110.

ANNEX—FIRST FLOOR

Auburn Automobile Co., 122.
Austin Automobile Co., 119, 120.
Buick Motor Co., 114, 115.
Chicago Automobile Mfg. Co., 116.
Jackson Automobile Co., 123, 124.
Pierce Engine Co., 125.
Punge-Finch Auto & Gas Engine Co., 121.
Tinther Motor Car Co., 117.
Vehicle Equipment Co., 128 to 130 inc.
Welch Motor Vehicle Co., 126.

SECOND FLOOR ANNEX—COLISEUM

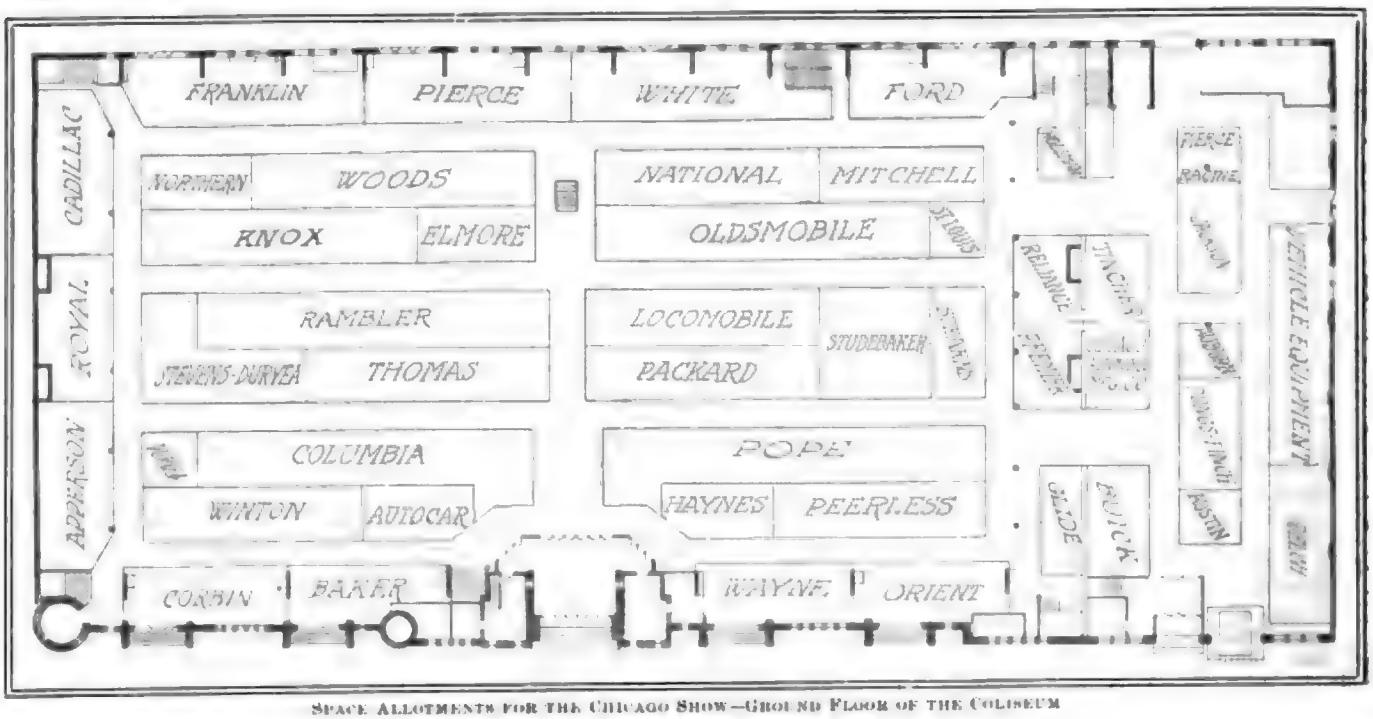
Automobile Supply Co., 264.
Aerocar Co., 247, 248.
Beckley-Ralston Co., 222 to 224 inc.
Cook Railway Track Appliance Co., 280.
Continental Caoutchouc Co., 274 to 278 inc.
Columbus Buggy Co., 241 to 243 inc.
Chicago Pneumatic Tool Co., 235 to 238 inc.
Cullman Wheel Co., 257.
Dac Automobile Supply House, 288, 289.
Dayton Folding Tonneau Co., 285.
Dorris Motor Car Co., 233, 234, 239, 240.
Joseph Dixon Crucible Co., 217.
Duff Mfg. Co., 268.
Excelsior Supply Co., 272, 273.
Gaulois Tire Co., 287.
Hendee Mfg. Co., 283.
Imperial Brass Mfg. Co., 279.
Knoblock-Heideman Mfg. Co., 221.
London Automobile Supply Co., 263.
Limousine & Carriage Mfg. Co., 219, 220.
Mahattan Storage Co., 269, 270.
Madison-Kipp Mfg. Co., 266.
Motor Car Equipment Co., 260.
Motorcar Co., 250.
North Chicago Machine Co., 281.
Nordyke & Marmon Co., 227, 228.
Railway Appliance Co., 271.
Sherwin-Williams Co., 286.
Samson Leather Tire Co., 261, 262.
Standard Carriage Lamp Co., 225.
Universal Storage Battery Co., 218.
Volta Battery Co., 282.
Vesta Accumulator Co., 259.
Windsor Automobile Co., 251, 252.
Whiteley Steel Co., 226.

GALLERY—COLISEUM

American Electric Novelty & Mfg. Co., 136.
Atwood Mfg. Co., 201.
Aurora Automatic Machinery Co., 138.
Autocoil Co., 139.
Badger Brass Mfg. Co., 162, 163.
Baldwin Chain & Mfg. Co., 187.
Belden Auto Transmission Co., 216.
Brown-Lipe Gear Co., 186.
Brennan Mfg. Co., 157.
William H. Brown, 176.
S. F. Bowser & Co., 141.
Briscoe Mfg. Co., 134.
Byrne, Kingston & Co., 198, 199.
Consolidated Mfg. Co.
Detroit Motor Car Supply Co., 211, 212.
Detroit Steel Products Co., 208.
Diamond Rubber Co., 142, 143.
Diamond Chain & Mfg. Co., 182.
R. E. Dietz Co., 154.
Dayton Electric Mfg. Co., 150.
Edmunds & Jones Mfg. Co., 193.
Firestone Tire & Rubber Co., 132.
Fisk Rubber Co., 161.
Gabriel Horn Mfg. Co., 204.
B. F. Goodrich Co., 169, 189.
Goodyear Tire & Rubber Co., ½ 166, 167.
Gray & Davis, 165, ½ 166.
G & J Tire Co., 164.
Hartford Suspension Co., 195.
A. W. Harris Oil Co., 179.
R. E. Hardy Co., 178.
Hartford Rubber Works Co., 158, 159.
Hyatt Roller Bearing Co., 151.
Hine-Watt Mfg. Co., 146.
International A. & V. Tire Co., 155.
Jones Speedometer, 152.
Long Mfg. Co., 184.
McGlehan Mfg. Co., 207.
McCord & Co., 156.
Morgan & Wright, 148, 149.
Motsinger Device Mfg. Co., 144.
N. Y. & N. J. Lubricants Co., 180.
National Carbon Co., 133.
Oliver Mfg. Co., 192.
Pennsylvania Rubber Co., 202.
Pantasote Co., 209.
Prest-O-Lite Co., 177.
Rose Mfg. Co., 168.
Republic Rubber Co., 210.
Remy Electric Co., 171.
Spicer Universal Joint Mfg. Co., 185.
Swinehart Clincher Tire & Rubber Co., 183.
Standard Oil Co., 175.
Standard Roller Bearing Co., 173.
Schwartz Wheel Co., 172.
C. F. Splitdorf, 152.
Shelby Steel Tube Co., 147.
Sprague Umbrella Co., 140.
Steel Ball Co., 135.
Timken Roller Bearing & Axle Co., 188.
Tokeim Mfg. Co., 170.
Valentine & Co., 206.
Veeder Mfg. Co., 160.
Weed Chain Tire Grip Co., 200.
Wheeler Mfg. Co., 196, 197.
Webb Co., 191.
Warner Gear Co., 181.
Warner Instrument Co., 174.
Whitney Mfg. Co., 145.
Wray Pump & Register Co., 137.

MAIN FLOOR—ARMORY

Adams Co., A 50.
Acme Motor Car Co., A 41.
Auto Importing Co., A 14.
American Locomotive Motor Car Co., A 3, 4.
American Motor Truck Co., A 2.
Buffalo Electric Carriage Co., A 30.
Buckeye Mfg. Co., A 17, A 18.
C. H. Blomstrom Motor Co., A 8, A 9.
Berkshire Automobile Co., A 5.
Cleveland Motor Car Co., A 24 to A 26 inc.
John L. Dolson & Sons, A 40.
Daimler Mfg. Co., A 31.
Dayton Motor Car Co., A 27, A 48.
English Daimler Co., A 24.
Knight & Kilbourne, A 10.
Kansas City Motor Car Co., A 6, A 7.
Logan Construction Co., A 48.
Lozier Motor Co., A 36.



SPACE ALLOTMENTS FOR THE CHICAGO SHOW—GROUND FLOOR OF THE COLISEUM

Digitized by G

Oscar Lear Automobile Co., A 45.
H. Sargent Michaels Co., A 19.
Moon Motor Car Co., A 49.
Marion Motor Car Co., A 47.
Maxwell-Briscoe Motor Co., A 34, A 35.
Moline Automobile Co., A 33.
McCrea Motor Truck Co., A 39.
Palais de l'Automobile, A 32.
Panhard & Levassor, A 16.
Reo Motor Car Co., A 42, to A 44 inc.
Rapid Motor Vehicle Co., A 37.
Rainier Co., A 20 to A 23 inc.
Sinnestvedt Machine Co., A 46.
Smith & Mabley, A 11 to A 13.
Soules Motor Car Co., A 1.
Ralph Temple, A 15.
Western Tool Works, A 28.

GALLERY—ARMORY

American Lamp Co., A 61.
Auto Accessories Mfg. Co., A 59, A 60.
Eugene Arnstein, A 56.
Culver Novelty Co., A 86.
Chicago Caloric Engine Co., A 66.
Gearless Transmission Co., A 83 to A 84.
Hancock Mfg. Co., A 76.
Hutchison Electric Horn Co., A 72.
Hicks Speed Indicator Co., A 53.
Kinsey Mfg. Co., A 71.
Look Electric Co., A 66.
Milwaukee Rubber Works Co., A 82
Michelin Tire, American agency, A 51.
J. R. McKeague, A 52.
P. Reilly & Son, A 80.
Speed Changing Pulley Co., A 62.
Tritt Electric Co., A 69.
Ventilated Cushion Co., A 85.
Way Muffler Co., A 54.

MORE GOOD ROADS BILLS

Washington, D. C., Dec. 18—Senator Latimer and Representative Brownlow have again introduced in congress their bills to establish in the agricultural department a bureau of public highways and to provide for national aid in the improvement of the public roads. Both bills are identical and set forth that the object and purposes of the public highways bureau shall be to cooperate with the various states and territories in the construction and improvement of permanent public roads; to make investigations and experiments in regard to the best methods of road making and the best road making materials, and to bring about as far as possible a uniform system for the repair, improvement and construction of the public roads throughout the United States. The various provisions of these bills were fully set forth last year when they were pending in the last congress and are familiar to all readers of MOTOR AGE. The Latimer-Brownlow bills carry with them an appropriation of $24,000,000 to carry out the provisions of the proposed law, said appropriation to be available at the rate of $8,000,000 a year.

HARD SLEDDING FOR MORRELL

Washington, D. C., Dec. 16—Representative Morrell's bill to place touring automobiles under the jurisdiction of the interstate commerce commission has been freely discussed in government circles and more than one high government official has stated that the bill savors too much of class legislation to be popular with the masses. The members of the interstate commerce commission are not particularly enthusiastic over the proposition of Representative Morrell to add to their already arduous duties. While the members of the commission decline to express an opinion regarding the merits or demerits of the pending bill, it is known that they are not at all in love with the measure and indirectly they may cast their influence against it. On the whole, it looks like pretty hard sledding for the Morrell measure.

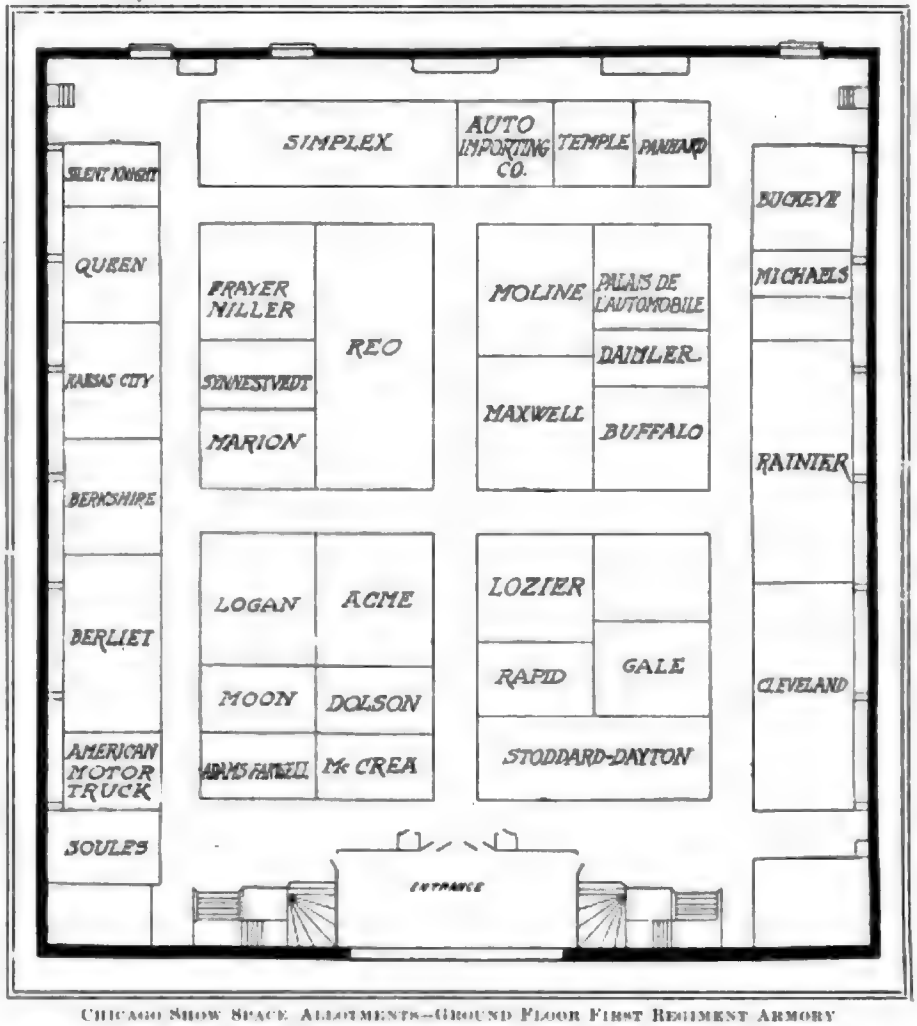
DAY HAS ASSISTANCE

Marcus I. Brock To Be Associate Manager of the A. L. A. M., Beginning January 20

New York, Dec. 18—The announcement is made that the Association of Licensed Automobile Manufacturers is to have an assistant general manager. This is Marcus I. Brock, former sales manager of the Autocar Co., of Ardmore, Pa. The appointment is made necessary by the increasing work of the association. The system adopted within the last year of increasing the number of departments has resulted in a division of the work so that the association now has the board of managers, executive committee, agency department, patent and legal department, mechanical branch, technical and test committee, metallurgist, association patents committee, traffic department, show committee and hand book committee. Many of these branches have frequent meetings and the increase of detail and routine business has almost swamped General Manager George H. Day. Mr. Brock will take off of his hands the great bulk of the detail work and leave Mr. Day free to attend to the more important matters of litigation, patents and the shaping of the general policy of the association. Mr. Brock will begin work with the licensed association January 20. It was announced several days ago that he had severed his connection with the Autocar Co., but his future intentions were not given out until the announcement was made that he would be Mr. Day's assistant in the management of the license association. Association work has grown extensively during the past year and still more work is in sight, so that assistance in the executive department became necessary.

MADE LONG TRIP

Houston, Tex., Dec. 16—Intended for use on the Southern Pacific Railroad between Houston and Galveston, a motor car built in the shops of the Union Pacific at Omaha last week traveled under its own power to Houston. The test given it in this manner was perfectly satisfactory and made a great impression on railroad men who watched its performance. Frequently it maintained a speed of 30 miles an hour for 25 miles and on one or two occasions did several separate miles in 57 seconds, or at the rate of 63.2 miles an hour. The stretch between Beatrice, Neb., and Kansas City, a distance of 210 miles, was done in 9 hours. This motor can pull two trailers easily and tests have shown that it can be stopped in 112 and 115 feet while going at a speed of 20 miles an hour without inconvenience to the passengers. It seats fifty-eight.



CHICAGO SHOW SPACE ALLOTMENTS—GROUND FLOOR FIRST REGIMENT ARMORY

Digitized by Google

REOITES LOST IN THE SNOW

Megargel and Fassett Nearly Perish in Storm 13 Miles Outside of Flagstaff, Ariz.—Searching Party Finds Them Without Gasoline or Food—Tourist's Last Letter

Flagstaff, Ariz., Dec. 19—Special telegram—Percy Megargel and David F. Fassett, the representatives of the American Motor League, who are working their way back to New York after a trip to the coast in their Reo Mountaineer, nearly perished in the snow 13 miles from this town. They left here yesterday but owing to the heavy storm fears for their safety were entertained, so a searching party was sent out and the missing ones found late tonight in a desperate condition, snowed in without food or gasoline, near a deep pass in the mountains. A few hours longer and they would have perished from the bitter cold. Both men had managed to save themselves from being frozen to death by use of gasoline to start a fire. Smoke from this fire led the rescuers to them. By a mere chance a squirrel had been shot during the day and cooked over their fire. It was their first food for over 36 hours. While looking for the automobilists the searching party came across the frozen body of a logger who had been lost for 2 days.

Flagstaff, Ariz., Dec. 17—After passing a cold night in the snow some 30 miles west of here, the Reo Mountaineer plowed its way into town late this afternoon and will leave on the morrow for the east. Flagstaff is the highest point on the Arizona division of the Santa Fe and it was pointed out to us at Los Angeles that we would be unable to get over this mountain at this period of the year, but beyond having to plow our way through from 12 to 18 inches of snow and sleep on the ground a couple of nights, we have not experienced the troubles pointed out to us.

While I much prefer sleeping in a bed, sleeping in the snow is not so bad as anyone would imagine. If the snow bank is high enough you can shovel a hole large enough to spread your blanket in and sleep fairly warm. Of course, toward morning when the mercury drops down toward the zero mark one does feel a little numb and sometimes it takes 15 to 20 minutes to awaken your feet and hands after the remainder of your body is wide awake, but when they tell us it is much colder in the east and as we are bound that way we have no business to complain of Arizona weather—even as experienced in the vicinity of Flagstaff.

At Williams where we stayed Friday night, the Santa Fe railroad switches tourists' cars to the Grand canyon of the Colorado, some 60 miles to the north. Despite the winter weather there are a great number of tourists taking the canyon trip. Had we a little more time I would have headed the Reo Mountaineer northward and run to the canyon, as it is considered one of the American wonders of the world. It looks to me as though there would be an excellent opportunity for someone to start an automobile stage line from either Williams to the Grand canyon or from Flagstaff to the same place, the canyon being about the same distance from either town. Numerous automobile stage lines in Nevada are paying handsomely, passengers in some cases cheerfully paying $20 for a 50-mile trip, which can be made in 2 hours by automobile, but takes 12 for stages drawn by horses.

When we rolled into Seligman last Thursday morning, we did so with the knowledge that our desert traveling was mostly over. Soon after we left that town we came into the ranch country, meeting herds of cattle every few miles and occasionally passing bands of cowboys and freighters. The roads, however, were about the worst it has ever been my lot to travel. In many places the trail along the railroad track had not been wagoned for weeks, the teamsters simply running from the nearest railroad station back into the country to their ranch or mine as the case might be.

Lava rock, the terror of automobile tires, was encountered Thursday, Friday and Saturday and we have more to follow. These sharp black stones simply cut a tire all to pieces in a short time. I would sooner wind my way through tin cans, broken bottles and nails, than to have to run continuously over lava. Nor were the tires the only part of the machine to suffer from these obstructions, for sometimes we would find huge piles of lava in the very middle of the trail and so situated that it could not be rounded. In these cases we would stop our car and getting out, pile stones and brush on either side of the obstruction until we had built a temporary bridge that would allow us to cross.

When hidden by several inches of snow these lava rocks are at their worst and broken truss rods, missing petcocks, and battered muffler show only too plainly the hard knocks the little Reo Mountaineer has been receiving since it left the sand desert along the banks of the Colorado. Occasionally we get hung up and then it is necessary to get out our wagon jack and hoist the wheels up until the obstruction is cleared. This all takes time and we are now 3 days behind our schedule with abundance of snow reported all along the line ahead.

Tomorrow we will have to undertake one of the most dangerous and correspondingly exciting adventures of the trip. This is the crossing of the Canyon Diablo on the narrow railroad trestle. The trestle is a single track affair, 250 feet from the bottom of the canyon below, without either guard rail or outer planking. Some ranchmen have told us that it made them dizzy to crawl across on their hands and knees. Just what effect it will have on my nerves as I steer the Reo across is yet to be ascertained. Fassett says he thinks he will walk across, and I don't know as I blame him much. Still, with nearly a foot to spare on one side and the other two wheels securely inside the rails, there should not be much danger for me in the car I have crossed the continent in.

There is one thing I miss very much on this trip and that is the good old-fashioned side hampers that were in vogue before the side entrance tonneau cars came out. While we have our tonneau to put things in, we manage to lose out pretty nearly everything we need. Thursday I purchased a lot of canned provisions and Thursday night when I went to cook supper a box of crackers and some black coffee was all that I could find.

While 3 days behind in our schedule we still have hopes of gaining enough time in the east to bring us into New York in time for the automobile show, although too much snow reported in Kansas, Illinois or Pennsylvania would cause us to pull for the south and end up our trip at some southern Atlantic seaport rather than in New York city.—PERCY F. MEGARGEL.

Needles, Cal., Dec. 10—With the Great American desert half crossed, and a large part of that done in the face of the worst sand storm of the season, it looked here as if the Reo Mountaineer would get through to New York in time for the automobile show unless held up by very severe weathers further east. The car left Los Angeles on December 6, and averaged 80 miles a day all the way across the desert, over a barren waste of sand that has always been considered impassible for automobiles or horses.

For the first time since leaving New York city last August the Reo Mountaineer capsized coming over the Cajon pass, tipping over and rolling down to the bottom of a steep embankment, but without serious damage to itself or to its crew. The spill was caused by taking a bad turn, concealed in the road, at too great a speed for sandy roads. With the exception of the mud guards, lamps, searchlight, front spring and steering wheel, the car was unharmed. Using the cable and windlass, the car was soon in the road and running like a thing of life toward the east. It was a narrow escape and fully illustrates the fact that it is unsafe to run at a greater speed than 15 miles an hour over unknown roads in California.

From Daggett, Cal., to Albuquerque, N. M., the trail lies for the greater part of the distance over a barren waste of white shifting sand, known as the Great American desert. We left Daggett knowing full well what was in store for us. We carried sand tires for every wheel and in addition two long strips of the heaviest canvas we could procure. A new and stronger cable has replaced the old one that we added at Omaha and a new pair of tires adorned our two rear wheels. It was difficult pulling and more than once we had to change to our low gear, sometimes using it for miles, but our water circulation was good and the engine struggled gallantly onward, each mile counting and encouraging us to proceed.

It was the first time the desert had been invaded by an automobile and every human being we met stopped and stared at us in amazement. Large crews of Mexican section hands stood with mouths and eyes open in wonderment as the Reo Mountaineer glided past, running through

Digitized by Google

sand 5 and 6 inches deep and doing it on the high speed, while the section bosses, usually Irishmen, invariably took their hats off and bowed in reverence as we sped past. At every railroad tank at which we stopped for water, the railroad hands crowded around us and plied us with questions.

To cross the desert in either America or Africa without running into a sand storm would be a tame affair and the fates well know this, so Saturday morning we awoke to find the wind blowing a gale, and the desert before us a mass of rushing, whirling sand. The storm was general and all through California, Arizona and New Mexico the wind howled and piled, shifting sand so high on some of the railroad tracks that service on that branch was delayed for hours. Trains were stalled everywhere, yet the Reo Mountaineer plugged on through the desert, making 87 miles that day, directly against the wind and facing a sand storm that obscured the sun's rays and caused a darkness at noon equal to that of night. Not only was the desert ahead hidden from view, but the sand cut like knives and our unprotected faces suffered greatly. The other occupants, Fassett, the mechanician, and W. C. Vaughan, a Los Angeles automobilist and cattleman who is acquainted with the country through California, Arizona and New Mexico, used their hands to protect their faces. I had to steer with one hand, but the other I used as best I could to keep out the sand. My eyes, however, insisted upon filling up time and time again despite my goggles.

We understood that we would find a good ferry boat at Needles that would cart our automobile across the Colorado river into Arizona territory, but found upon arriving at the river bank, that the ferry boat had been broken up months ago, and that the ferry had ceased to be used owing to no roads on the opposite bank. After considerable delay we found an Indian who owned a rowboat and after bargaining with him we secured the services of himself, boat and an assistant for the sum of $6. It was our only chance of getting across the river and, although risky business loading the automobile on a row boat, we accepted it as one of the conditions imposed upon automobile tourists and took the chance. The boat rocked and rolled when it struck the rapids in midstream and once or twice all of us thought the Reo Mountaineer would dive into the depths below, but it didn't and we eventually landed on the opposite side in a pile of as white light sand as I have ever encountered on my travels. Luckily we had a cable, for the bank was steep and it took a long pull and a hard one to get the car to the top of the bank, where we encamped for the night, in our twelfth state or territory.—PERCY F. MEGARGEL.

FOR ARMY USE

Cleveland, Dec. 17—An automobile ambulance, intended for use in the army service at Washington, started from Cleveland last week on the overland trip to the capital. The machine was constructed after the design of one of the captains in the army corps and embodies several features heretofore unknown in army ambulance construction.

BIG RACE FOR FRANCE

Pressure So Great Grand Prix Will Probably be Revived at Aix-les-Bains

Paris, Dec. 7—France will race next year. The tire contest and the little run around Europe in a touring car does not satisfy the sporting section of the Automobile Club of France, and a few hours ago that body decided to hold a long distance road race next season. Before taking a final decision the advice of the most influential French makers was asked, and they were found to be almost unanimously in favor of the old course being followed. M. Mors was opposed to racing and the Marquis de Dion, whose hobby is regularity, did not vote. The balloting was sufficiently unanimous to leave no doubt in the minds of the members of the Automobile Club of France, and immediately they charged the sporting commission to organize a road race for 1906.

Speculation as to what the event will be is not a difficult matter, inasmuch as less than 12 months ago the club brought forth a scheme known as the grand prix, and dropped it almost immediately. It is thus quite safe to say that next year will be the revival of the grand prix of January, 1905. As to the choice of a circuit the Aix-les-Bains district, proposed for the Bennett of 1905, is likely to be decided upon. There will be no controls, a few stiff grades are thought desirable, and a moderate length of circuit, giving a total distance of 300 or 400 miles at highest possible speed, will be sought. Whatever may be the decision of the international committee, the Bennett event will not be run again under existing regulations. France cannot undertake it now, and Italy which is the nation next best qualified to take it over, has really got as much as it needs in the Florio cup event over the Brescia circuit.

Runabouts are really coming to the fore in the republic, and on every hand new machines are being put on the market and new tests imposed in order to bring these smaller vehicles before the attention of the public. Lacoste & Battmann, who took part in the 7 days' touring contest around Paris, have just sent their little machine on a further trip from Paris to Bordeaux, a return journey of about 700 miles, just to prove that its automobile can still keep going although it did not win the first prize. They have also undertaken to assemble a new machine, all the assembled parts for which will be brought together at a given hour; travel to Bordeaux and back again to Paris, all in 50 hours. Two hours are calculated for stamping the part, about 6 hours for fitting and 42 hours, or as many less as possible, for the 700 miles journey. Considering this is the worst season of the year and that there are a few stiff hills to climb between Paris and the famous wine city, it is a no small task that the little 8-horsepower car has to face.

The Automobile Club of France is of opinion that there is no precedent for interference in the runabout contest which took place a week ago and the stage of the journey which was disorganized by nails being strewn over the road, must remain a part of the contest.

The first prize thus goes to the Vulpes, which had but 241 points against it for the whole 7 days, and the regularity prize is carried off by the de Dion Bouton, the only team of three cars finishing the contest. The official results are as follows:

Car and Driver	Penalties
1. Vulpes, Barriaux	241
2. De Dion Bouton, Lionel de Dion	327
3. De Dion Bouton, Cormier	439
4. Lacoste & Battmann, Gachet	502
5. De Dion Bouton, Bardin	561
6. Gregoire, Tavenaux	1,334
7. Lacoste & Battmann, Rochay	1,726
8. Gregoire, Renonce	3,437

FIGHT SHY OF FRENCH TOUR

London, Dec. 9—The European circuit organized by the Automobile Club of France is attracting some attention on this side, but only from firms who consider that they have a chance of establishing themselves on the continent. Among these must be included Napier, Wolseley, Daimler, Humber and Rolls. It is certain that all these firms will enter and take an active part in this event for various reasons. Edge declares his is merely a defensive policy. He will enter and compete in every French event merely in order to show that his cars are not afraid of continental competition. The Daimler policy is one which favors participation in reliable contests for ever and ever, and as the firm did well in the Herkomer trophy contest it proposes to pursue it further. The Wolseley policy is largely founded on the same lines. This firm has never failed to score in any reliability contest in which it has entered. The Rolls-Royce is dictated by somewhat the same ideas as actuated Edge, but beyond these firms there is no prospect of further support from the British trade. The whole thing is regarded as a huge advertisement got up by the French club for the French trade, inasmuch as the competitors to a large majority will be drawn from French manufacturers, consequently their chance of success, quite apart from the conditions which are certain to be constructed in their favor, must out-weigh those of any other country. Of course there is a risk so far as they are concerned in some particular foreign firm coming out ahead, but that risk might easily be discounted in betting parlance as a 33 to 1 shot, not because of any inherent superiority in French cars, the Englishmen think, but ply because it will be impossible to give a decisive verdict.

NO '06 BENNETT RACE

New York, Dec. 19—Special telegram—Cable advices from Paris say delegates of the International Association of Automobile Clubs met yesterday and decided there would be no race for the Bennett cup next year. It was arranged to hold another conference in June, 1906, to decide whether a race for the cup should be held in 1907 or whether it should be definitely abandoned. The consensus of opinion is that the race will be abandoned, the cup remaining in the possession of France. Some of the delegates censured the alleged bad organization of the race for the Vanderbilt cup on Long Island.

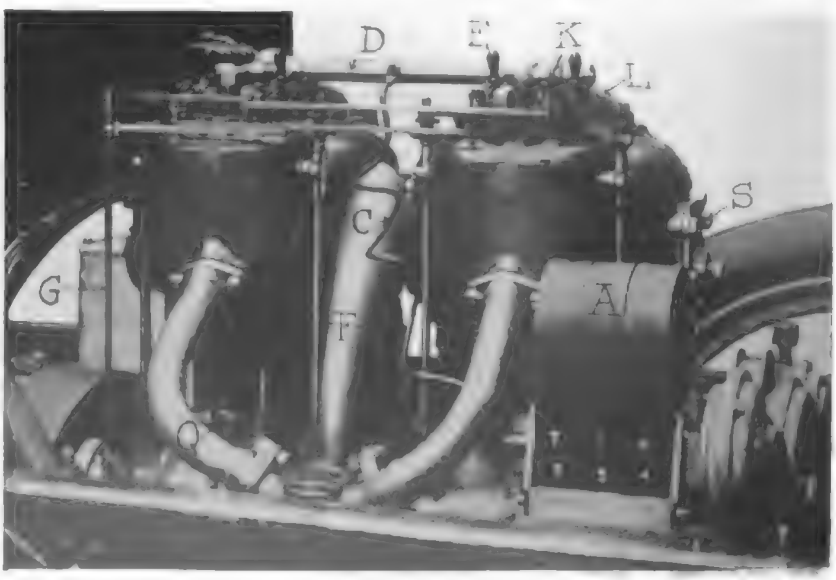
Digitized by Google

'06 Cleveland with Victoria Body

THE Cleveland Motor Car Co., of Cleveland, O., is introducing its model F 30-35-horsepower car, which will be its leading production for the coming year in place of the 20-horsepower car it brought out this season. It is practically a new model, although a great many of the features which proved successful this year have been retained, most of them with increased size and capacity. Among the most important changes is the adoption of the Simms-Bosch low-tension magneto with make-and-break spark in place of the jump spark ignition, used this year. Ball bearings are used wherever practicable and much imported steel is used. The wheelbase is 6 inches longer than before and the wheels 34 inches instead of 32 inches. The Hill precision oiling system is used and the control of spark and throttle is from the wheel entirely. But one lever is used in gear changes. The propeller shaft has two universal joints and the torsion rod has been dispensed with. The new body is of particularly attractive design, being of the Victoria type, with graceful curves.

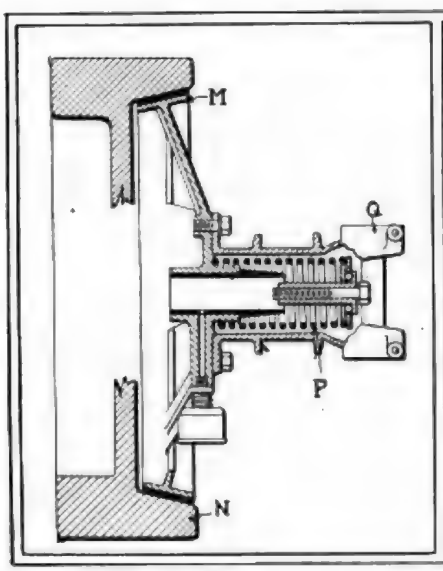
Replacing its system of jump spark ignition with a low tension scheme with mechanical make-and-break devices in the inlet valve ports heads, and having the current supplied by a gear driven Simms-Bosch magneto, is the one leading change in the motor construction. The motor, as before, is made with the four cylinders cast in pairs and with valves disposed in ports at opposite sides, the inlets in the bottom of ports P on the right side, with the ignition plates H bolted to the top part of the ports and the exhausts similarly situated in ports N on the left side. Both sets of valves are removable through openings in the port heads, caps with yokes holding them in place being used for closing these. Simplicity in the intake pipings on the right is very marked and on the left by having a separate exhaust pipe M connecting each exhaust valve with a common pipe, besides being novel makes this side of the motor much more accessible and also has the advantages of the hot pipes being well removed from the cylinders. The magneto A, carried on a separate bracket on the motor and gear driven from the camshaft, the gear being housed in the part B of the forward casing, delivers its current direct to the make-and-break igniters by a single wire C, which collects the current from the armature and delivers it to a horizontal bus bar D, carried on the top of the motor. From this bar the current passes to each cylinder igniter by way of knife switches E. By these switches any of the igniters can be tested conveniently. In operating the make-and-break devices recourse is had to a set of four vertical rods F, one for each igniter. These rods are driven by bevel gears off the camshaft. Instead of being raised and lowered by cams, as are push rods, they are revolved through the bevel gears. A long bearing X on the top of each valve port is furnished. On the top of each rod is an eccentric drive by which the make-and-break device is operated. Timing of the spark is through the vertical rod G with arm at the lower end, to which the shifting mechanisms are attached. By placing the make-and-break devices on the top of the inlet ports instead of on the sides or end of the ports they are made accessible for examination and repair.

The timing gears are enclosed in aluminum casings and are of hard bronze. The camshaft is forged of one piece, the cams being forged integral with the shaft itself. The cams are case hardened and the rollers which operate the lifting movements are also case hardened. The connecting rods are of nickel steel and are hardened at the piston end, the wrist pin also being hardened and secured in the piston by means of a spring washer fitting into a groove in the piston ring which makes it impossible to work loose. The brasses on the crank ends of the connecting rods are of special bearing metal. The circulating system consists of a honeycomb cooler and the circulation of the water is positively induced by a centrifugal pump R of large dimensions, mounted directly on the engine and driven by a gear from the exhaust camshaft. A cooling fan is mounted on the front cylinder and is driven by a leather belt from a camshaft pulley. The mounting of the fan on the front cylinder at S eliminates, to a large extent, the noise that is generated by this high speed action when mounted in a hollow standard such as the

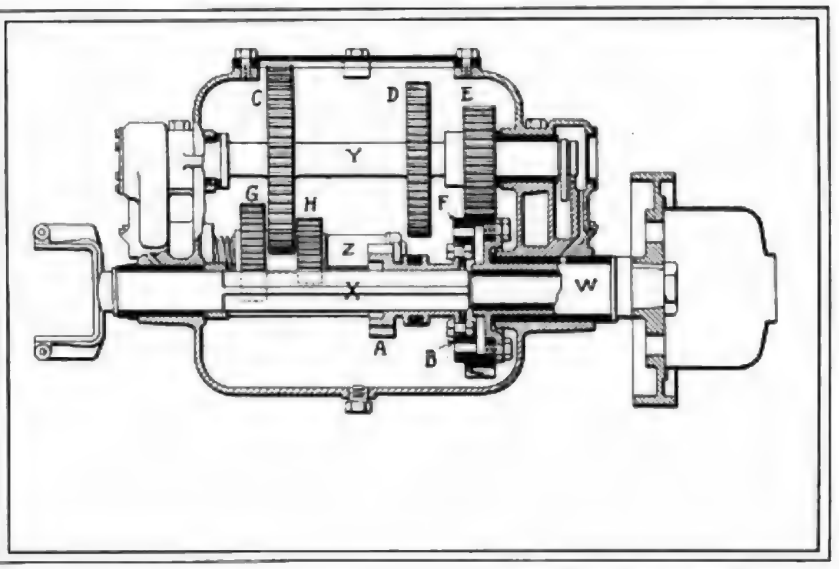


CLEVELAND MOTOR, SHOWING MAGNETO AND MAKE-AND-BREAK DEVICE

Digitized by Google



CLUTCH ON CLEVELAND CAR



SLIDING GEAR SET ON THE CLEVELAND

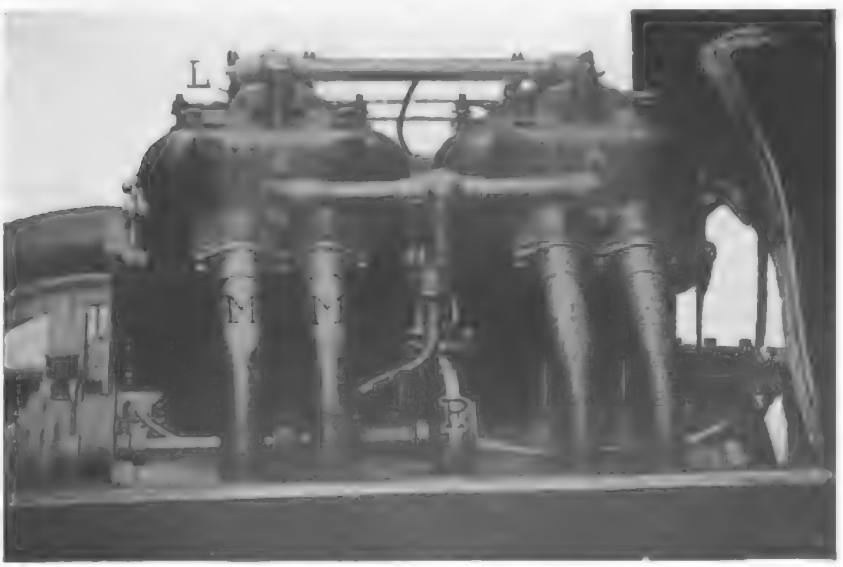
cooler. A Hill oiler lubricates all the bearings in the engine and transmission, besides furnishing a surplus of oil, which is used for the splash lubrication of the cylinders. The carburetor is of the float feed type, with compensating air openings. The interior of the float chamber has a hollow tube and there is a needle point valve in the center of the air opening. The needle is adjustable from below and is set to give the proper amount of air for any particular condition. The float fits around the inside wall of the float chamber. The throttle valve portion is cylindrical in shape and has gas ports in the upper portion and air ports below. The throttle is controlled by a lever on the steering wheel and is independent of the spark advance.

The clutch is an aluminum leather-faced cone M which is received into a corresponding shaped recess in the fly wheel N. The spring P, which gives the clutch its gripping action, is so arranged that no thrust is transmitted to the engine bearing. A universal joint Q connects the clutch to the transmission, preventing undue wear to the engine and the transmission, due to the two principals being out of alignment.

The transmission is of the sliding gear type, giving three speeds forward and a reverse. The intermediate pinions are on one countershaft Y, which is always running, while the reverse pinions are on a second countershaft Z. For low speed the sliding gear A passes into mesh with gear C, which drives the main driving gear F through the countershaft driving gear E. For the second speed, gear B passes into mesh with countershaft gear D which drives in the same way as before. For the third speed, sliding gear B engages with an internal gear cut in F which connects the mainshaft X and propeller shaft W as one. For the reverse, sliding gear A passes into mesh with reverse pinion G which operates on the reverse pinion countershaft, at the same time the reverse pinion H engages with the countershaft gear C, reversing the direction of C, consequently reversing the entire driving mechanism. The shafts and gears are all of high point carbon steel and are oil tempered. The bearings are also of carbon steel and are hardened, ground and equipped with oil rings. The driving gear, which is always in mesh, is pinned and keyed to its shaft. The hubs of all other gears are forged integrally with the shafts, and the gears are bolted to them.

The propeller shaft is equipped with cardan joints and is made of high carbon steel. The rear axle is bevel gear driven and is of the well known hub clutch type. The exterior casing upon which the rear wheels revolve is hardened and ground. It carries the weight of the machine, and the floating axle which this tube surrounds has but one function to perform; driving the rear wheels. The differential is mounted on ball bearings and the driving shaft is also equipped with similar bearings. The driving gears are of four pitch. All wheels are equipped with ball bearings and the races and cones are hardened and ground to size.

The brake equipment consists of a band brake on the propeller shaft, actuated by a foot pedal, and emergency brakes of the internal expanding type, enclosed in dustproof covers on the rear wheels. The brake bands are of phosphor bronze and work on steel drums. The front axle is of I-beam section and is made of a single piece of drop forged nickel steel, while the steering knuckles are of high carbon forgings, oil hardened. Oil hardened pivots are used, as well as pins in the front axle and steering connections. The steering gear is of the nut-and-screw type and is irreversible. The casing is a malleable casting in a single piece and is substantially fastened to the frame. The controlling levers for the mixture and spark are on top of the steering wheel, the quadrant for these levers being stationary. The gear change and emergency brake levers are on the side of the driver's seat. The clutch is operated by a pedal as is the brake on the rear transmission shaft.

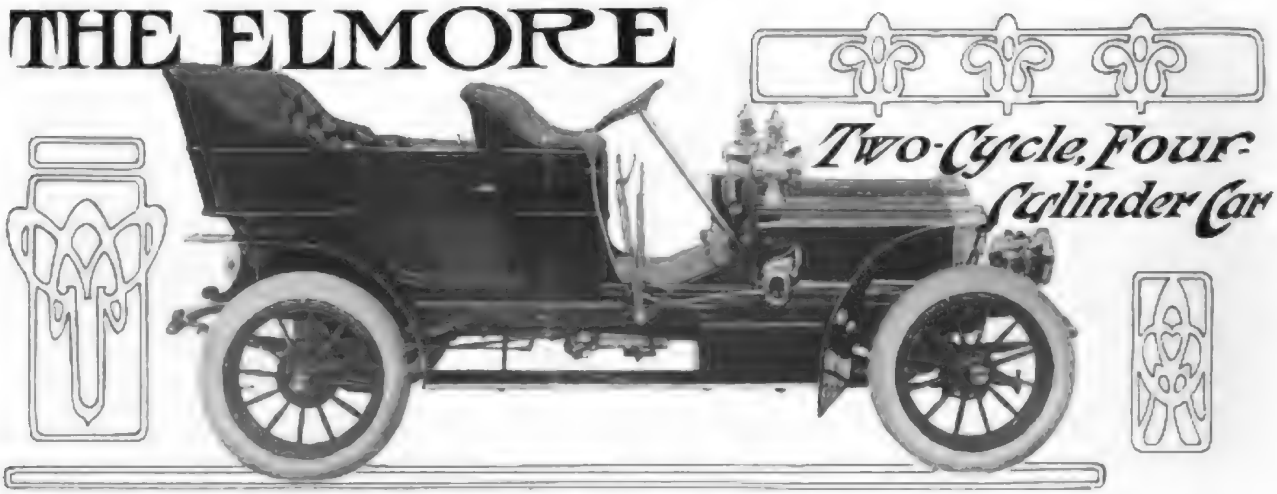


EXHAUST SIDE CLEVELAND MOTOR, SHOWING PUMP

Digitized by Google

THE ELMORE

Two-Cycle, Four-Cylinder Car



DEVOTEES of two-cycle automobile motors will have many new points of interest in the 1906 machines built by the Elmore Mfg. Co., of Clyde, O., the leading and practically the only exponent of the two-cycle for motor car use up to the present season, when one or two other concerns brought out motors designed on this principle, noticeable among which must be noted the Olds Motor Works, of Lansing, Mich. The consistent performance of the present Elmore car, the Pathfinder, was followed with interest 17 months ago when it made the double journey from New York to St. Louis and return and since then the two-cycle principle has aroused much discussion as well as undergone considerable experimenting by several of the leading car builders in this country.

Elmore motors have always been constructed with horizontal cylinders placed side by side beneath the center of the chassis, each provided with a separate gas-tight crankcase, into which the mixture was supplied by a separate carbureter and the compression of the case in turn used in forcing the mixture into the explosion part of the cylinders. In two of next year's models vertical cylinders carried under a forward bonnet are used. One is a 35-horsepower five-passenger touring car with four separately-cast cylinders and driving through a Mercedes type of clutch, sliding gear set and cardan shaft to the rear axle and the other has two vertical cylinders mounted in front and power transmitted from them through a clutch the same as used in the larger model and thence through a planetary gear set and shaft drive to the live back axle. An Elmore carbureter fashioned along Krebs lines supplies mixture to the entire set of cylinders in each model.

In the larger machine, two views of the chassis of which are shown, standard frame construction is used. Side pieces made from deep channel sections are offset alongside of the motor and a sub-frame is used for carrying the motor and gear case. Both the crankcase and gearbox have integral lugs, resting direct on the sub-frame pieces. In tying the side pieces of the main frame together, channel cross parts are used. Each is cut with a gusset plate integral with it for reinforcement. Four semi-elliptic springs carry the main frame. Each has five leaves 2 inches wide, with both sides polished to reduce friction as well as to prevent water entering. The thickness of the leaves is graded from the center to the ends and clips are used to retard the recoil. Both axles are of tubular construction. The forward carries on either end the steering knuckles, brazed in position, and is slightly dropped to protect the crankcase base. The rear axle is of standard live type, with all parts revolving on Hyatt roller bearings. A Brown-Lipe spur differential gear is used and is enclosed within a large housing, the top portion of which is removable for inspection purposes.

Few changes have been made in the cylinder design other than placing them vertically. Of the changes made the casting of the head integral with the cylinder walls and waterjacket must be noted, as must the arching of the top of the combustion space instead of having it flat, as heretofore; the placing of the spark plugs vertically in the cylinder heads and those changes imperative in the crankcase because of the vertical cylinders.

As can be seen in the plan view of the chassis, each cylinder is a separate casting and has a gastight crankcase, the interior of which is made with as small a capacity as possible. In taking gas into the cylinder it is first conducted from the carbureter, which is carried low at the left side, into the crankcase, in which is sufficient pressure to force it through a channels in the sides of the cylinders to ports, where it enters the combustion chambers. On the right side of the cylinders are channels connecting the crankcase and combustion chambers and on the opposite side are the entrances to the crankcase and the exhaust ports. The reciprocation of the piston serves to open and close the inlet and exhaust ports, opening the inlet on the down stroke, so that mixture can be transferred from the crankcase to the combustion chamber by suction in the latter and pressure in the former. This construction means that there are only three moving parts in the cylinders—the revolving crankshaft, the reciprocating pistons and the connecting rods, valves being replaced by ports and camshafts, push rods and the other four-cycle accompaniments eliminated. The pistons are made with a vertical ledge across the top, which serves in directing the intake gas to the top of the cylinders when entering, their movement aiding in driving out the exhaust gas, the inlet and exhaust ports being so placed on the opposite sides that the inrushing gas aids in scavenging the cylinders. The cylinders have a bore and stroke of 4½ and 4 inches, respectively, and all internal parts are turned and ground. The crankshaft is a hammered steel forging and runs in long bearings. The pistons are made with four rings, three at the top and one at the bottom.

A Hill oiler is used in lubricating the

LEMOET TWO-CYCLE FOUR-CYLINDER TOURING CAR

Digitized by Google

SIDE VIEW OF CHASSIS OF ELMORE FOUR-CYLINDER TWO-CYCLE TOURING CAR

motor. This is carried on a separate bracket on the right side, near the dash, and is belt-driven from a horizontal shaft on right side of crankcase. Oil is supplied direct to the motor bearings and a sight indicator on the dash shows that the oil passes through each lead of the bearings. The main engine bearings are fed by one main high-pressure cup on the dash; turning the hand wheel on this oiler to the right feeds grease to these bearings. In the water circulation system a positively-driven pump is carried on the front end of the horizontal shaft. The pump takes its supply from the base of the radiator and delivers it to the left side of the waterjackets; from the top it passes to the top of the radiator. The commutator, made with regular roller contacts, is carried on the top of a short vertical shaft, driven by bevel gears off the front of the drive shaft which carries the pump and from which the oiler is driven. Both the high tension wires to the clasp and the commutator wires are supported by rods from the top of the dash to the radiator.

The clutch used is of the Mercedes bronze ring expanding variety, claimed to be smooth in action and not requiring frequent adjustment. It has the expanding ring always centered, preventing friction when not in use. A universal coupling connects with the mainshaft in the gearcase.

This gear set, working on the sliding principle, gives three forward speeds and one reverse, with direct drive on the high speed. All changes are made through one lever at the driver's right. Roller bearings are used on both shafts in the case. All gears are heavily made and run in oil. By the use of an interlocking system it is impossible to engage the clutch with the gears out of mesh. The clutch is also interconnected with both the internal expanding emergency brakes on the rear hubs and the regular band brake on the drive shaft in the rear of the gear box, application disengaging the clutch. The cardan driveshaft carries Spicer universal joints front and rear and carries a small bevel pinion for driving onto the differential bevel.

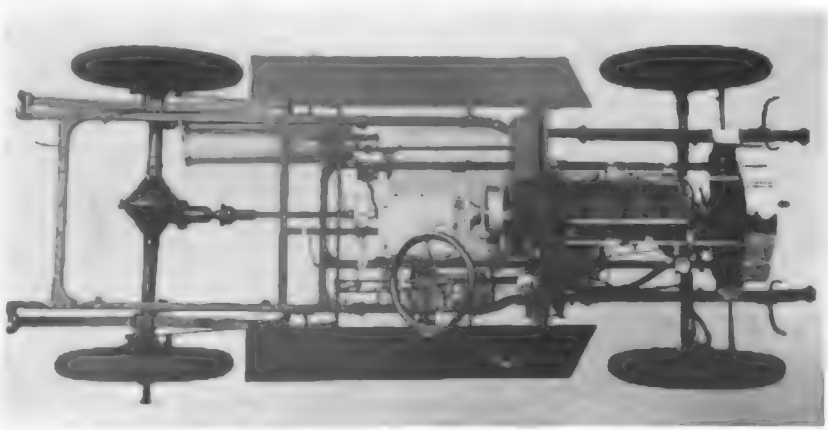
Steering is through a worm and segment gear from a hand wheel 15 inches in diameter, two and one-quarter turns of which turns the front road wheels from the right to the extreme left. Gasoline is carried in a 20-gallon steel tank under the front seat. Attractive body lines predominate in this model. They are an imitation of Napier curves, combined with Mors lines in the hood. The seats are made from bent wood, access to the rear seat being through a very wide side entrance.

A straight dash, carrying the coil, hand oiler and battery switch is used. Both of the operating levers on the right—the change speed and emergency brake levers—are nearly vertical in their normal position and, being close to the seat, do not obstruct the entire entering space at the right. The steering column is well inclined, rising from the footboard close to the dash, and is of the non-tiltable variety. On it are located the spark and throttle control levers. A neat effect is gained by using normal size fenders over the front and rear wheels. Metal running boards connect these. On the front of the right board is placed the battery box. A complete lamp and horn equipment is furnished.

In model 14 the two vertical cylinders have a 4½ and 4 inch bore and stroke, respectively, and a rating of 24 horsepower at normal crankshaft speed. The motor construction is practically the same as in model 15, but being proportionately smaller. This model has 92-inch wheel base, 32 by 3½-inch tires, and seating accommodation for five. In the planetary gear set roller bearings are used throughout. For control of the car the spark and throttle levers are on a quadrant on the steering wheel and the clutch can be thrown out by either the pedal or the change speed lever at the right of the car. Regular brakes are applied by pedal and emergencies by side lever.

In both models the water tank and radiator are combined. The radiator part is a series of flat tubes surrounded with copper fins. The combined capacity of the two is sufficient for 150 miles' travel on ordinary roads. The radiator is made with a heavy brass framework, taking the shape of the hood and having on top the usual filling cap. A simple tubing system to the pump and water jackets is used, regular cooling being followed.

Model fourteen has a body differing entirely from that of the large machine. It has the usual hood, with side inspection doors, covering the motor, and a flat tube radiator in front. The tonneau, seating five, is entered by wide side entrances, and can be detached, and a turtle deck substituted, giving a runabout effect. Bent wood is used entirely in making the seat parts; heavy upholstering is used, and green adopted as a standard color.



PLAN VIEW OF ELMORE FOUR-CYLINDER TWO-CYCLE CAR

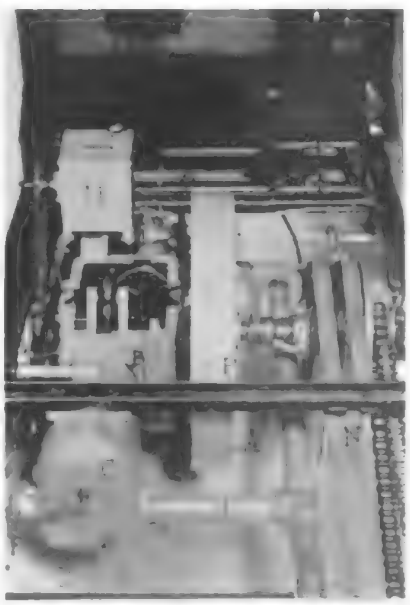
Digitized by Google

GALE TWO-CYLINDER TOURING CAR

GALE 18-HORSEPOWER, TWO-CYLINDER TOURING CAR

AN 18-horsepower touring car, with two-cylinder opposed motor carried lengthwise beneath the body, and drive through a two-speed and reverse planetary gear set and single chain, is the new machine built for the coming season by the Western Tool Works, of Galesburg, Ill. This company, after a year's experience in building its light runabout, has entered upon the construction of this larger model, with the hope of placing on the market a machine of ample power for four or five passengers and not weighing more than 1,800 pounds. Nothing radical in design or construction has been attempted, the maker preferring to include only tried features, giving practically nothing that has not been embodied in successful American machines during the present season. As in the runabout, accessibility has been sought and in doing this the body has been hinged at the rear and divided behind the footboard so it can be raised at the front to an angle of 45 degrees, thereby exposing the entire power plant of the vehicle and making it possible to effect repairs or replacements without crawling under the machine. In order that the body may be so hinged the fuel tank and battery box are carried beneath a large false hood in front, the horizontal tube radiator forming the front of the bonnet.

In building the main frame angle steel pieces have been used in the sides and ends. Two channel cross parts A midway of the ends carry the motor. In having the cylinders C take their support beneath these pieces the center of gravity of the machine is lowered and the body of the vehicle is left open for carrying baggage. The crankcase B is made box-like and has the ends bored for carrying the phosphor bronze crankshaft bearings, which have a diameter of 1¾ inches and are long. By leaving the top open, using a large readily removable inspection plate to cover it, accessibility to the inner parts is assured. Both sets of valves are mechanically operated and interchangeable, the inlets on the left being removable through inspection ports covered by the caps D and the exhausts on the right side are removable by taking out the caps E. By this disposition the float feed carburetor can be conveniently placed beneath the footboard at the left. It connects through a Y system of piping, necessitating the mixture to each pair of cylinders traveling the same distance. The exhaust piping H is carried outward direct from the motor and connects with a longitudinal pipe K to the muffler, carried crosswise at the rear, the pipes thus lying between flywheel and gearcase and supported midway of their length by a bracket from the cross piece A. In actuating the valves regular push rods lying along the under side of the cylinders are used. The valves are made with integral heads and stems, the former beveled to 45 degrees. Instead of rollers on the ends of the push rods, large curved integral feet are used, the curves on the feet being determined by testing. The use of these feet lessens the number of parts used in the valve scheme and, the maker claims, gives as easy action and long life. The pistons carry three compression rings, each with lap joints. Each ring is ⅜-inch wide and 5-32-inch thick. I-section steel connecting rods carry bronze bushings, those at the crankshaft end being split diagonally and held by screw studs and pins. The crankshaft is a drop forging.



SUSPENSION OF THE GALE MOTOR

Lubrication is by a chain-driven Hill oiler M, supported on a bracket on the forward cylinder. It delivers oil directly to the crankpins by a feed pipe at each side, the crankshaft being drilled for this purpose. The oil is fed through the cheek of the crank directly to the pin and the excess thrown off is caught by oil pockets and oils the camshaft, bearings, gears and cams. A portion of the oil through the leads passes to the end bearings in the crankcase. Another oil lead connects with the end bearing to the right of the gearcase.

Ignition is by means of a double dash-pattern coil with current supplied from two sets of dry cells. The timer and secondary wires, which are of Immunity cable, are conducted back to the motor through a conduit L, which not only supports them, taking the strain off the plugs in the cylinder heads, but further protects the wires from oil and dirt and aids in preventing short circuits. Snap connections are used on the plugs. Imported spark plugs of standard ½-inch pipe thread are used.

Both cylinders are cooled from the same system, a single pump on the end of the crankshaft at the left maintaining the water circulation. The pump takes its supply from the radiator base and delivers it to the bottom side of the jackets. It exits at the top and passes directly to the radiator, which is of regulation design and consists of successive sets of horizontal tubes combined with a water tank.

Standard construction exists in the gear set, carried on the right end of the crankshaft, which has a third bearing in the right side of the frame. Perhaps the feature of the transmitting scheme is the placing of the chain sprocket at the outside of the gearcase and consequently the placing of the differential at the right end of the divided axle, a construction that greatly increases the clearance of the machine and places the driving strain on both the crankshaft and the axle close to the end bearings instead of in the center and remote from the bearings. The maker claims to be able to deliver more power to the axle because of this arrangement. The transmission case is made oil tight and the gears are packed in grease. For high speed, which is with direct drive, the cone P is thrust to the right through a bell crank connected with the change speed lever, not shown in the chassis illustration but seen in the view of the machine. This cone separates a set of levers pivoted on the end of the case and which operates direct, locking all gears so that the case revolves as a unit with all its gears idle on their shafts. For slow speeds and reverse two fiber-lined friction bands are brought into use. These bands, as shown in the chassis illustration, take their support at N on the frame cross piece and also through the operating connections

Digitized by Google

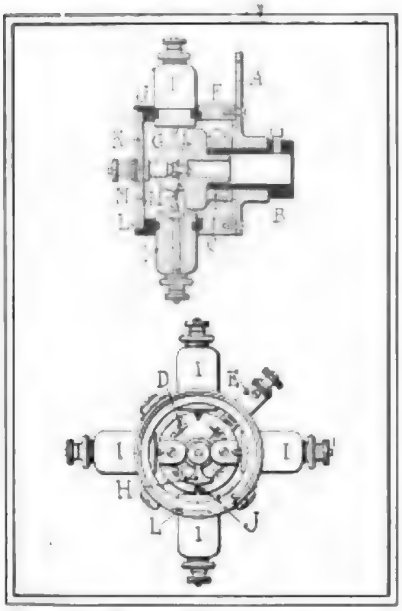
at the front. All gears within the case are made with coarse pitch and the set is designed on the three pinion principle. The operating lever for the forward speeds is so designed that the wear of the low speed band is taken up by a longer throw of the lever. By this method the driver is always sure of himself on a long hill by simply throwing the lever another notch. After excessive wear the speed band rod can be shortened and the lever brought back to its original position. The rear axle is strongly made with the drive shaft 1¾ inches in diameter and centrally bored from end to end, one oil cup thus lubricating the entire axle. Hyatt roller bearings are fitted and ½-inch ball end thrusts are used for removing any possible friction. Radius rods connect direct from the end of the crankshaft with the center of the axle and are fitted with a ball joint and turnbuckles for adjustment. The rear springs are provided with an adjustment so that when the chain is tightened the springs remain horizontal instead of having a tilt.

The body is of the side entrance type, with individual front and wide rear seats. Besides a regular vertical motor bonnet, for sheltering the ignition batteries and gasoline tank, there are such other parts as hollow metal dash and large fenders connected with metal running board. The tires are 30 by 3½ inches. The color is imperial blue, with light yellow running gear. Equipment includes 6-inch Mangin mirror reflector headlights and generator.

MOSLER'S IGNITION DEVICE

A. R. Mosler, 1679 Broadway, New York city, has as one of his specialties for the coming season a combined ignition outfit in which is carried all parts of the electric system except the batteries, spark plugs and the five wires used in the outfit. On the automobile dash is carried a glass box made with a brass frame work and hinged door, the latter secured with Yale lock. Through the door of the box the entire mechanism, consisting of the coil, a primary interrupter and secondary distributer, can be seen at all times and should adjustments be needed it is only necessary to open the door, when the entire unit can be examined. In advancing or retarding the spark the high tension wires to the plugs are not moved, the wire terminals being in sectors bearing directly against the terminal in the distributer and the sectors are of sufficient length to permit advancing or retarding without the terminals passing beyond the sector ends.

The wire from the batteries connects with a binding post B on the left end of the glass case, the wire connecting through this with the primary winding of the coil B. The other end of this winding connects through the contact D, so that the current passes to a fixed sector E on the back panel of the case and from this sector through the brush post F to the four segments of the primary interrupter. From these it goes to the grounded shaft and returns through the car frame to the battery, thus completing the primary circuit. The secondary or high tension winding of the coil has one terminal grounded through this same post and the other connects with a brass strip L which has its

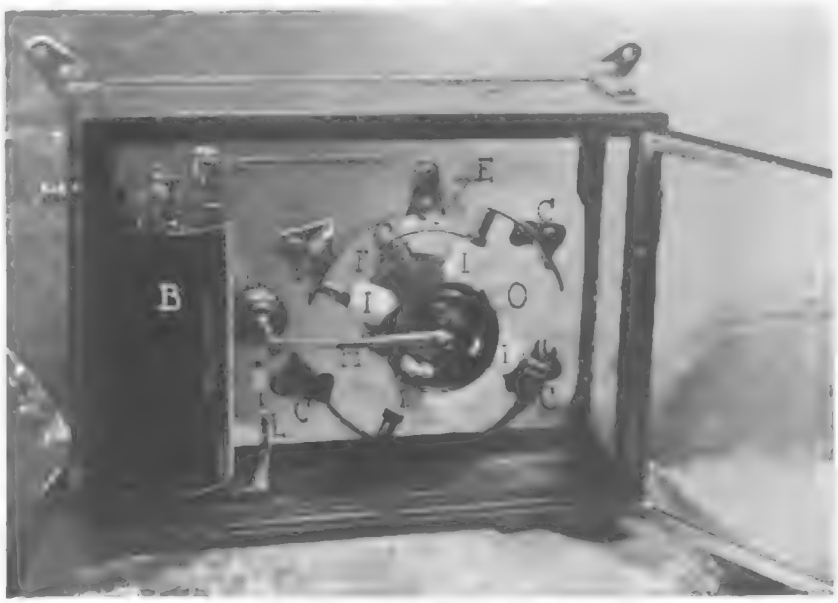


TWO VIEWS OF THE MOSLER DISTRIBUTER

upper end supported by a hard rubber bracket K on the back panel of the case. From this bracket a movable flexible arm H carries the current to the central terminal O of the high tension distributer. This arm hinged at the end connecting with the bracket K can be swung around its pivot away from the center of the distributer, so that with the case locked and the arm H away from the distributer it is impossible to start the motor. The course of the high tension circuit after reaching the distributer center O is through revolving ball contact with the rotating T-shaped brush. The four high tension terminals are within the insulations I and at their outer ends bear directly on the four segments C, which are secured to the rear of the case and to these are attached the four wires to the plugs, the high tension wires being connected in brass bending posts.

Construction of the primary interrupter and secondary distributer can be best understood from the sectional illustrations, showing the regular Mosler interrupter and distributer, identical with the one used in the glass ignition box. In the side section the hollow shaft B is intended to fasten to the end of the shaft, which is to drive the commutator, set screws being furnished to fasten it in place. To this sleeve is journaled a plate A, which aids in supporting some of the parts. To the inner end of the sleeve B is attached the hard fiber insulating collar C. In the outer surfaces of this collar is embedded the four equally separated contact pieces D, shown in dotted lines in the plan view. These blocks are grounded to the frame of the machine through the small screws which hold them in position. Upon these revolving parts bears a carbon brush E, fastened in the electrode ring F, which is in turn carried on the part A. The secondary distributer is well insulated from the primary parts through a porcelain insulating block G secured to the end of the shaft B, revolving of course when it revolves. This insulation G carries a contact piece H with a segmental end as can be seen in the plain section of the device. The high tension wires to the spark plugs connect with the terminals I and instead of the brush H contacting with these it passes very close to the small point within them and the spark bridges the gap.

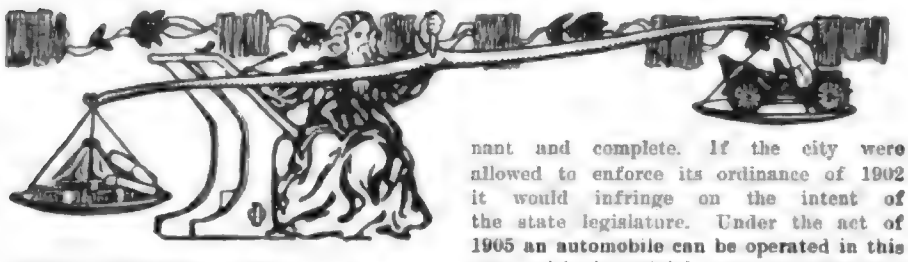
The secondary distributor is easily detachable from the primary part. The electrode ring piece F is so constructed that by pins and spring catches the part or ring J carrying a separate glass front for the secondary part can be readily detached. In holding the rings parts F and J together one is made with a pin entering a hole in the other and a pair of flat springs on the ring F have openings at their outer ends so that when the parts J and F are together the springs engage pins with rounded heads in the part J and thus the two parts are linked together.



MOSLER IGNITION DEVICE AS IT APPEARS ON DASH

Digitized by Google

LEGAL LIGHTS AND SIDE LIGHTS



ARGUE QUAKER CASE

Every automobilist of note in Philadelphia—layman and tradesman alike—crowded into common pleas court No. 4 last Wednesday to listen to the arguments of counsel in the case of the Automobile Club of Philadelphia vs. the mayor and other officials of the city, in which the former asks for an injunction restraining the latter, on and after January 1 next, from enforcing the municipal laws governing the operation of motor-propelled vehicles in Philadelphia, the contention being that they conflict in many particulars with the new state laws and that automobilists cannot observe both. There was a learned array of counsel on both sides, with Judges Willson, Audenried and Carr on the bench. The latter, after hearing the arguments, announced that they would reserve their decision in the case until some time next week.

The ball was opened by Attorney Ira J. Williams for the automobile club, who said his clients were all tax-paying members of said club, and that the injunction was asked against the city authorities to save his clients from additional expense in purchasing tags bearing the city's license numbers for display on their cars. Mr. Williams argued that the ordinance of councils of 1902 providing for these license tags was abrogated by the later legislation contained in the act of assembly of 1905, which provided a state tax for motor cars operated within the confines of Pennsylvania.

One section of this act, Mr. Williams pointed out, sets forth "that not more than one state license number shall be carried upon the front and back of said vehicle while operated or used on any of the public streets or highways, * * * and a license number obtained in any other place or state shall be removed from said vehicle while the vehicle is being used within this commonwealth."

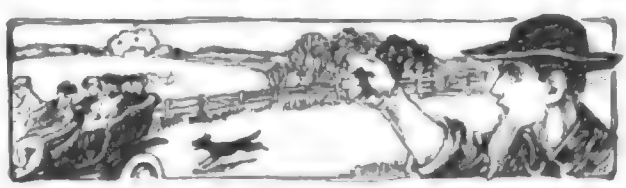
Attorney Williams contended that the purpose of the passage of this act was obviously to create a uniform method of licensing automobiles in Pennsylvania, and to dispense with the necessity of an automobile being decorated with a galaxy of numbers such as made Mark Twain exclaim, when he was struck by a motor car, "I heard it; I felt it; I smelt it—but all I saw was a mass of numbers." The municipal ordinance, said Mr. Williams, was inconsistent and repugnant to the new state law. The city, he said, is a creature of the state and its powers over the highways and the running of vehicles are limited. They must not conflict with any law of the commonwealth, which is absolute, dominant and complete. If the city were allowed to enforce its ordinance of 1902 it would infringe on the intent of the state legislature. Under the act of 1905 an automobile can be operated in this state with the official state tag displayed, and if it is stopped in any city or county for failure to display that city's or county's tag, the authorities of said city or county must show authority to compel the display of its license tag. This practice of compelling automobilists to decorate their cars with a series of tags issued by different cities and counties was a mongrel system, and if sanctioned by the honorable court would destroy the value of the license required by the state law.

Mr. Williams concluded by pointing out that the act of assembly of 1905 clearly showed the legislature's intent to regulate the licensing of automobiles with uniformity throughout the state, for the very purpose of avoiding multiplicity of licenses being required by motor vehicles driven through the various localities in the commonwealth.

On behalf of the city, Assistant City Solicitors Alcorn and Lowengrund appeared, the former doing the talking. He asked the judges to construe the act of 1905 and then say what effect it had, if any, upon the ordinance of 1902. He argued that the ordinance was not nullified by the act, and the city had a perfect right to continue with its enforcement. He further said the rights and powers of the city to regulate the running of vehicles on its highways had existed long prior to the passage of the act. The act of 1905 was not a prohibitory measure as to automobile licenses, but simply gave permission for the running of automobiles under a state license. This permission, he argued, did not deprive the city of the right to enforce its ordinance relative to the same licenses. This ordinance provided that a license was only to be issued by the bureau of boiler inspectors to a competent operator, and in this respect the ordinance differed from the act, which only requires an applicant for a license to give his name, residence and age. The city ordinance also provided for a thorough inspection of the automobile for which a license was sought. There was no doubt, said Mr. Alcorn, that the city had full power to pass the ordinance, as several acts of assembly specifically authorized councils to provide for the proper regulation of vehicles.

In concluding his argument Mr. Alcorn said: "The act of 1905 does not supersede or repeal the earlier ordinance within the limits of the city of Philadelphia. The inquiry remains whether those particular sections of the ordinance under which a license fee is required to be paid and a license tag to be shown, are in such necessary conflict with a somewhat similar provision of the new state law that they must be regarded as nullified thereby. If is reasonably clear that the terms of section 4 of the act do not of themselves apply to license tags required by the municipal regulations of cities within the state. The restrictive part of the act—'not more than one state license number shall be carried upon the front and back of the vehicle,' etc.—does not contain a word to show that license tags other than those furnished by foreign states are alluded to, unless significance can be given to the single word 'place,' but it would seem obvious from the context that the word is used in a substitutionary sense for the purpose of extending the meaning of 'state,' so as to embrace other places beyond the commonwealth which are not states, such as territories, the District of Columbia, foreign countries, and the like. The entire section is evidently intended to provide that the license number furnished by the state highway department shall be displayed upon tags at the front and rear of the vehicle, and no other state license number shall be shown; and that this requirement extends to automobiles coming from other states or other places temporarily into the state of Pennsylvania. There is thus no conflict between this section of the act and those portions of the ordinance of 1902 which make it obligatory to obtain a license within the city of Philadelphia, and to display the license number. To attach any other meaning to these provisions of section 4 of the act would be to interpret them most narrowly and in such a sense as conflicts absolutely with the context and meaning of the section as a whole. If it be said that the purpose of the act, and particularly of this section of it, is to require the displaying of only one license number, the answer is that no such purpose anywhere appears from the language used. Again, it is considered how easy it would have been for the law making power to have said in a few words that but one tag number should appear, and with the knowledge that must be imputed to the legislators of the municipal ordinances upon the subject in various portions of the commonwealth, each requiring that a license must be obtained and a license number shown, it is especially significant that no such intention existed. The purpose nowhere appears in the act of 1905 to prohibit the display of more than one number, and that purpose could not be imported into it by interpretation, it was argued.

The decision, it is expected, will be handed down before Christmas day. Meanwhile, both sides are confident, and both the city and state authorities are preparing to collect from the automobilist, despite his confidence, that one of them will be beaten. The city has ordered its tags and the state highway department has all its paraphernalia ready for the expected rush of



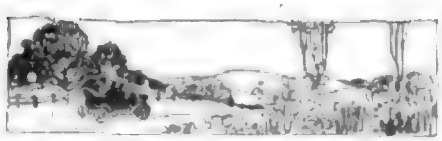
Digitized by Google

automobilists from all over the commonwealth after January 1 next. The highway department has already placed a batch of its applications in the hands of a local license broker, but pending the result of the legal battle he is not being overburdened with business.

The state highway department has solved the problem of getting the applications legally filled out by placing them in the hands of notary publics and license brokers in the various cities of the commonwealth, the latter, of course, asking an additional fee from the applicant. To save its members this added expense the Automobile Club of Philadelphia will have its secretary receive applications at the regular rate, $3.50.

MUST IDENTIFY DRIVER

One of the most important and interesting decisions affecting the rights of motorists that has ever been made by a criminal justice was handed down during the past week by Judge Gaskill, in the Middlesex superior criminal court, of Boston, on the appealed cases of Edward W. Taylor, of Concord, and Charles V. Smith, of Lincoln, charged with overspeeding automobiles in Concord. The evidence presented tended to show that at the time the machines owned by these men were caught exceeding the speed limit, neither of them was aboard and the cars were being driven by other than the owners. The decision of Judge Gaskill was to the effect that an owner of an automobile who is registered and has a license is not criminally liable



for overspeeding when he is not in the machine at the time of overspeeding and the chauffeur is controlling the car. He further ruled that in order to convict an owner of a machine for overspeeding the police officer must be able to identify him as being in the machine, and that it is not enough for the prosecution to prove that it was his machine that was overspeeding without knowing that he was controlling the same.

In the past it has been a common practice to convict the owner of a machine for overspeeding whether he was a passenger therein or not, and, what is more to the point, the great majority of convictions for overspeeding have been secured without the complaining official being forced to recognize the defendant as the man who was driving the machine at the time.

This decision of Judge Gaskill's will unquestionably form the basis of more than one appeal from the decisions of lower courts, owing to the established practice in more than one Boston court. This is considered as one step toward what has long been desired by motorists, namely, the identification by the prosecuting officer of the individual charged with overspeeding. More than one-half of the convictions have been secured without such identification, and in several instances that might be cited innocent persons have been found guilty. This was so in the case of W. C. Temple, who was convicted in Worcester for overspeeding in Leicester. As a matter of fact, the car was then operated by Mr. Temple's chauffeur, as it always is. Had he been a resident of the state he would have appealed from the fine levied upon him and fought the case to a finish, but being a resident of the west the easiest way out was the best for him and so he settled.

Judge Gaskill made another decision pending the settlement of the question, brought by Roland F. Sherman to the supreme court. The judge found Harry Fosdick guilty of overspeeding in Concord and fined him $10, but suspended the fine pending the decision. The evidence in the case which is now before the supreme court is exactly the same as in this instance, the defendant contending that although a passenger in the car he was not operating the same at the time of the arrest, and that on a point of law he cannot be convicted of a misdemeanor actually committed by another, even though he, the owner, may be a passenger in the car. For all this fight the motorists of Massachusetts are making for what they regard their rights the Bay State Automobile Association is being given the credit. Its efforts to clear the legal atmosphere and secure for its members a chance to win their cases in the courts have met with great success so far. The association will not rest content with these honors, however, but will take up other motoring cases.

THE INTERNATIONAL EXCHANGE

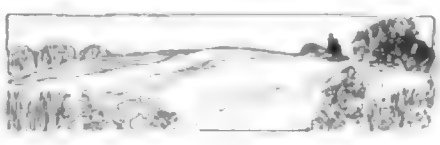
A special trade commissioner of the federal government who is now traveling in the orient has just forwarded some interesting details on the introduction and sale of automobiles in China. The trade to this time has not been very extensive, but it is likely to become so. The American cars seem to be firmly established by reason of their superiority. Some good advice is furnished manufacturers with regard to packing and shipping their machines.

China presents a steadily increasing market for automobiles, and the sale of cars of American make has kept pace with the demand. While the purchase of cars to this time has been confined almost exclusively to the foreigners of Shanghai, the wealthier Chinese now regard this mode of travel with especial favor; and as they are well able to afford the luxury it is safe to assume that the demand will soon extend to them. Chinese chauffeurs are the rule rather than the exception in Shanghai, and this familiarity of the natives with the running of the car, its speed, comfort and utility is assisting materially in influencing the Chinese in its favor. The roads in and around Shanghai are macadamized and kept in excellent condition by the municipal authorities, money is abundant, and conditions are generally favorable to the extension of the automobile business.

In 1900, six or eight steam cars were imported from the United States, but none of them was sold. In 1902 three Oldsmobile runabouts were imported and disposed of, and the next year two French gasoline cars were brought over. The cars were de Dion runabouts. A marked increase in the number of cars imported was noticeable in 1904 and 1905, while there has been a greater demand for higher-power cars. Several cars of from 10 to 20 horsepower have been sold and have given good satisfaction.

Close attention should be paid to the details of the shipment. No car should leave the United States unless its equipment is complete. This caution becomes all the more important because several instances are cited where a car has arrived in Shanghai and when unpacked discovery was made that the starting crank or some other essential part had been forgotten. This kind of carelessness occasions a long, unnecessary delay and natural irritation on the part of the purchaser.

Freight rates on automobiles are high, both by San Francisco and the Suez canal, and while it may be difficult to procure any reduction because of the comparatively limited number exported to the Orient, it is suggested that some action be taken, in the interest of the Chinese trade, looking to cheaper transportation.



The foregoing recommendations were made by men in Shanghai who have carefully studied the situation, and who believe that if they were faithfully followed a decided improvement in the business would result. The American method of packing automobiles is commended in Shanghai and is regarded as superior to that of any other country. Although the freight rates on automobiles from the United States to Shanghai are regarded as too high by the dealers there, yet they compare favorably with those from other countries. Insurance rates, however, are slightly higher. The freight and insurance charges on a car laid down in Shanghai amount approximately to $50 gold. The warehouse charges there are the same to all countries exporting automobiles to Shanghai, and are comparatively unimportant, as the cars are usually removed immediately on arrival. A customs duty of 5 per cent on the invoice valuation of the car, including freight and insurance to Shanghai, is collected.

In Shanghai there are now established two garages, and a third is soon to be erected. There is also a club known as the Automobile Club of China, which was organized in May, 1905, and already has a membership of twenty-two.

The New York Export & Import Co. and a French firm are the only business houses in Shanghai dealing in automobiles, but both regard the outlook for trade in this particular line as bright.

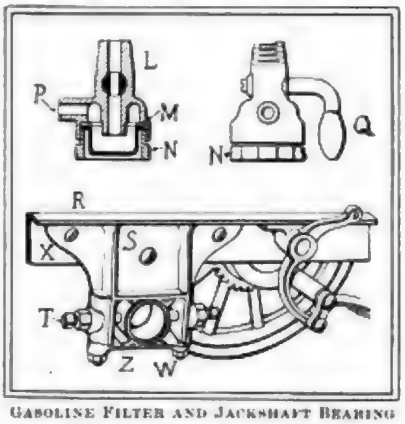
Digitized by Google

is a vulcanized fiber, which serves as an insulator for the device. The camshaft is inserted in the opening B and the connections for swinging the device in advancing and retarding is coupled at the opening F. Current enters through a wire attached to the one binding post E, and this post on the other side of the fiber part A connects with a spring C one end made fast to E and the other end resting on the pin G. The camshaft has two toes which bear upon the portion of the spring which is slightly curved and located adjacent to the camshaft opening B. The contact of the cam toes with the spring is positive as a screw D on the opposite side of the spring serves to hold the spring within touching distance of the cam toes. This screw, as shown, has the head cut away on one side, so that by giving it a quarter turn the spring C can be easily removed. As the camshaft carries two cam toes set at 180 degrees, two contacts and consequently two sparks are given for every revolution of the camshaft and each cylinder receives double the number of sparks necessary.

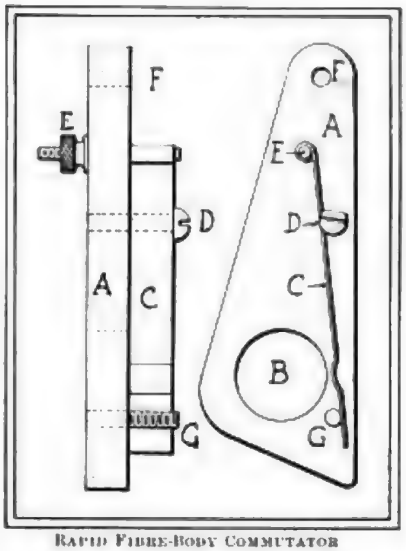
Mixture is supplied from a regulation float feed carbureter, supplied with gasoline, by gravity flow from a tank carried near the rear of the chassis. In the base of the tank is placed a special Rapid filter of which a sectional illustration is shown. Gasoline enters the top of the filter from the tank through and passing the stop cock L enters a cup-like basin N in the bottom of the strainer, supported by a screw seating holding the cup portion in position. In passing to the carbureter the liquid passes out by the passage P which is higher than the top of the cup and before reaching this passage has to pass a wire screen M.

Changes in speed are made through a two-speed and reverse planetary gear set carried on a continuation of the motor-shaft at the right, the motor fly wheel and sprocket for chain drive to the jackshaft being carried between the motor and gear set. The gear design is standard throughout, giving direct drive on the high speed and making use of two steel fiber-lined friction bands for the slow speed and reverse. These bands are so supported that when not in use they are held free of the drums by spring supports. Speed reductions are from a ten-tooth sprocket on the sleeve on the crankshaft to a thirty-tooth sprocket on the jackshaft and from sprockets with fourteen teeth on the ends of this shaft to others with thirty teeth on the rear hubs, giving one revolution of the rear wheels to every 6.42 revolutions of the sprocket on the transmission.

The jackshaft is carried close to the rear of the motor and carries the enclosed balance gear. Both bearings of the shaft are made with the object of ready adjustment of the shaft or quick removal. Manganese brackets S are riveted to the side angles of the main frame, each reinforced by vertical and horizontal webs across the bracket surface. The bottom portion of the bracket in the form of a hollow square carries a bearing cage W, which is held in place by the bottom part Z of the bracket, held in position by a pair of vertical screws. The bottom is reinforced by a central web. The bearing journals are slidable horizontally, there being set screws T at either side and locknuts for moving the cages to the front or rear for chain adjustment. Not the least important point about this method of jackshaft suspension is that the shaft can be dismounted without taking one of the drive chains apart. By removing the bracket caps Z the shaft and its parts can be lowered to the ground. Timken roller bearings are used.

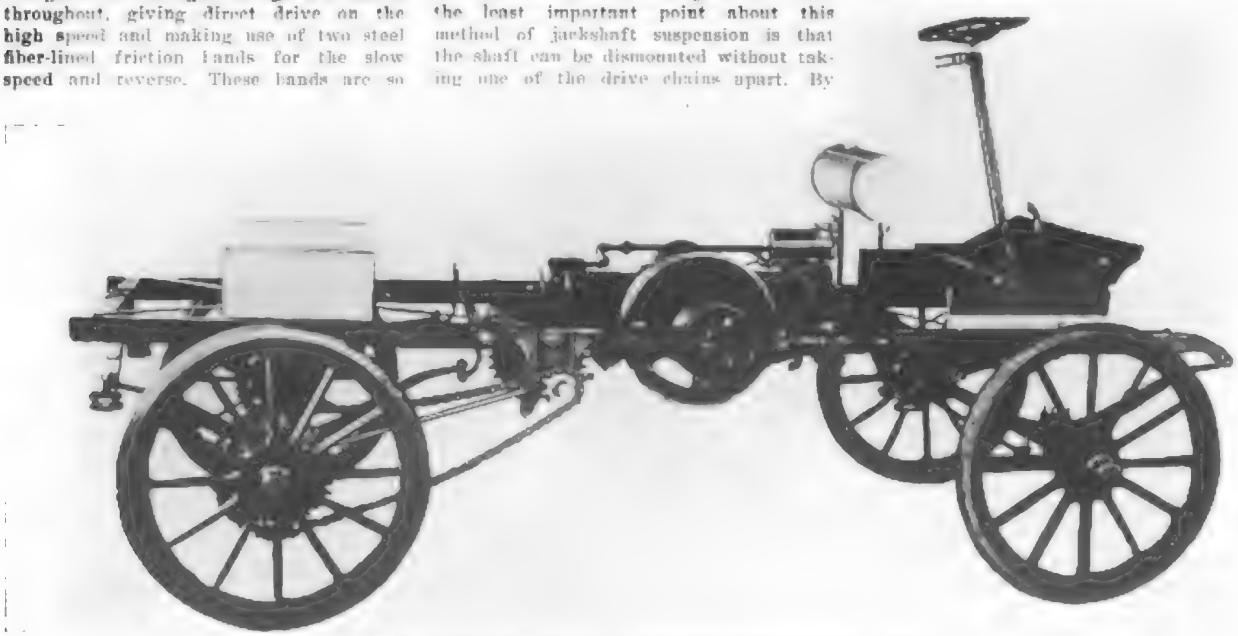


GASOLINE FILTER AND JACKSHAFT BEARING



RAPID FIBRE-BODY COMMUTATOR

Steering through a 14-inch hand wheel on the top of a slightly inclined column is the same as in most commercial vehicles, but the use of a pinion and internal sector steering gear is construction not widely practised. The column A carrying the hand wheel has keyed and pinned on its lower end the twelve-tooth pinion B which meshes with the internal sector C. This sector is itself carried on a steel shaft D, to which it is keyed and taper pinned and on the lower end of this shaft is similarly secured the steering arm E, which has a 7-inch radius. A bronze housing encloses the pinion and sector, the housing being in two parts, an upper and lower one, the former F secured to the latter G through a set of screws so that the top one can be quickly removed for examining the gears.


CHASSIS OF RAPID DOUBLE CHAIN DRIVE 3000 POUND DELIVERY WAGON

Digitized by Google

COMMERCIAL STEPPING STONES

PARSON'S 25-HORSEPOWER FRICTION DRIVE TRUCK

Hoosier Talk—There is talk of an interurban automobile line in Carroll county, Ind. The proposed route is through Burlington, Flora, Camden, Rockfield, Yeoman and other places. The object of the route is the offering of better transportation to and from Delphi.

In Maryland—The railway between Frederick and Thurmont, Md., which the Washington, Frederick & Gettysburg Railway Co. proposes to build, was originally intended to be an electric, but it is probable it will be the first railway in Maryland on which gasoline motor cars will be used. D. Columbus Kemp is the president of the company.

Fire Engine Auxiliary—A new role for the automobile truck is the carrying of coal for fire engines. This unique work has been instituted in Hartford, Conn., by the Knox agent who has had in the service of the fire department a regular Knox machine. During the past month it has been in service it has never missed a run and the fire chief has been well pleased with it.

Even In Cuba—An order for three twenty-eight passenger buses and one six-passenger touring car has been placed with the Knox Automobile Co., of Springfield, Mass., by the West Indies Transportation Co., of Havana, Cuba. This company has at present in its service eight Knox cars which have been in constant use for the past year. The present order will make a total of twelve machines in its employ.

An Express Wagon—A Knox commercial express wagon used by the Bethlehem Silk Mills, Bethlehem, Pa., which was placed in commission in February, 1904, has for the first time since its installation been placed in the repair shop for a coating of paint and other adjustments. The machine does heavy work. Formerly two two-horse teams were employed by the mills in unloading freight and taking it to and from the depots, but the Knox supplanted both of them. Between February 1, 1904, and July 1, 1905, almost 1½ years' constant service, the actual period covered being 17 months, the mileage made was 5,122. The cost per mile of lubricants, fuel, etc., was .0029; gasoline, .0448; license, insurance, etc., .0136, a total mile cost of .0874.

In Texas—The automobile service for passengers between San Angelo and Sonora, Tex., has been installed by the Southwestern Transit Co. Endeavors will be made to secure the mail contract, and a regular passenger service will also be operated in the former city.

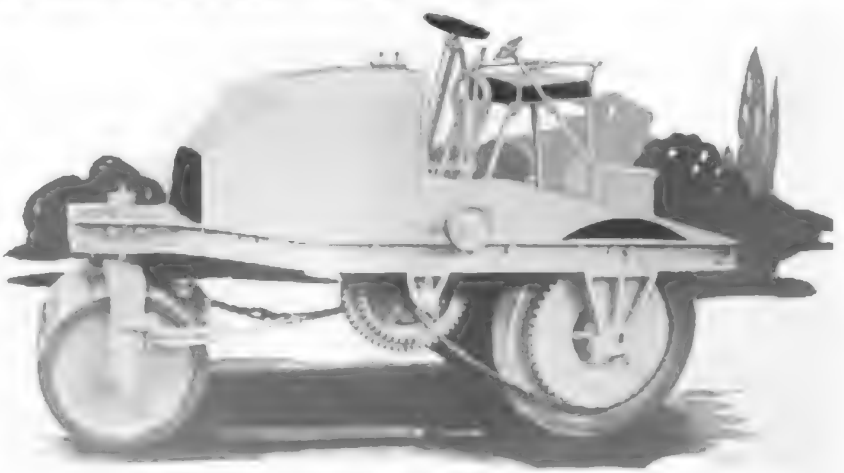
New Plant—The Torbensen Motor Car Co., of Bloomfield, N. J., announces it has purchased property in that place and is fitting it up for the manufacture of motor trucks. The property consists of a two-story brick building 50 by 60 feet and a similar building 30 by 75 feet.

Edge's Latest—The Regent is the name of a new 12-horsepower motor delivery wagon manufactured by S. F. Edge, London. This is the first commercial wagon manufactured by the company and the machine from tests already made is looked upon as a success. Power is supplied by 12-horsepower two-cylinder vertical motor, carried beneath a standard shaped bonnet in front. Front wheels have a diameter of 30 inches with 4½-inch tires, and the rear ones are 3 inches greater. The carrying platform of the car has an area of 64 square feet and the wheel base is 11 feet 6 inches in length. The gear box gives four forward speeds ranging from 3 to 8 miles per hour. Drive is by double side chain. The machine has a carrying capacity of 2½ tons.

A Kansas Product—The Parsons Auto Street Car Co., Parsons, Kan., is building a line of 25-horsepower friction drive trucks as shown in one of the illustrations. This machine is capable of making 12 miles an hour on ordinary city streets with full load. The concern is making other strides in the motor industry, having in operation in Kansas several passenger buses which run on regular schedule, taking the place of street cars. These buses carry five to twelve passengers and are fitted with lower-powered motors than the trucks. The motors are placed horizontally beneath the load platform.

Evidently Not a Jay—Elmer M. Cooper, a farmer enthusiast of the motor car living near Cadiz, Ind., uses a steam engine around his farm for grinding grain for his fellow farmers. Recently when everything was going along merrily the engine broke down and disappointment stared the visiting farmers in the face. Undismayed, the farmer motorist ran his automobile out of its shed and driving up to the barn where the corn-grinding was taking place, he jacked the rear wheels up and, coupling the motor car engine to the grinder, used it until the day's work was done. The motor of the automobile did the work well and was in continuous use until the steam engine was repaired.

Gasoline Roller—A novelty that is going the rounds in European commercial motor circles is a gasoline land roller suitable for market garden use or for regular farm purposes when built in large sizes. A vertical motor is carried on a steel frame work, to which is attached in front and rear a long roller equal in length to the width of the machine. The front roller is pivoted and connected up to a steering wheel and serves in guiding the machine. Drive is through a partly enclosed gear set and double side chains to the ends of the rear roller. All controlling means are grouped around the operator, who sits on a small seat above the rear roller.



GASOLINE LAND ROLLER FOR AGRICULTURAL USES

Digitized by Google

FROM THE FOUR WINDS

HOME-MADE 1-BOYPOWER RACING MACHINE SEEN AT ORMOND, FLA.

Farmers Interested—At the 2 days' meeting of the Lucas County Farmers' Institute, at Sylvania, O., last week, a good roads program was an entertaining feature of the event.

Judge All Right—Judge Porter, of Newcastle, Pa., has called the township road supervisors and constables before him and directed them to hold a good roads convention there this winter, when competent engineers will be secured to show them how to make good roads.

Air Ships May Race—Toledo may be the scene of a race for airships during the coming season. A. Roy Knabenshue, of Toledo, and Lincoln Beachey, of the Pacific coast, have both come under the management of Charles J. Strobel, the former baseball magnate, who is now busy arranging dates for the two aeronauts for the coming season. Beachey declares he is willing to make an aerial sprint with Knabenshue.

Many Want State Aid—It is announced from Harrisburg, Pa., no new applications for state aid in road building can be accepted for 6 months. Applications are in excess of the power of the highways department to investigate, and of the fund at its disposal. This is a marked change from the report a year ago when applications were few. There has been an awakening of interest in the meantime that augurs a transformation of Pennsylvania highways.

Chauffeurs Organize—A new organization has been formed in San Francisco, known as the Chauffeurs' Association of Northern California, and it already includes nearly all the chauffeurs in the western metropolis, besides many country drivers. The association has adopted strict rules in regard to speeding and has cautioned its members to respect all laws regarding driving so that they may not conflict with the authorities. The association proposes to act summarily with offenders against these regulations and it will go hard with a driver who is seeking employment to have his name in bad standing with the Chauffeurs' association.

Florida Boymobiles—Even the kids at Ormond, Fla., have the racing fever and home-made machines are seen in impromptu speed contests. The motive power comes from another small boy behind who pushes.

Not Raffles After All.—It has developed that the mysterious automobile, which was supposed to be the medium by which the famous York road Raffles journeyed around suburban Philadelphia, is nothing more alarming than the innocent conveyance employed by several out-of-town young men who are regularly detained in the city beyond train time—sitting up with a sick friend.

Talk Club in Toledo—Another automobile club is expected to be formed by owners at Toledo. It has been 3 years since the Toledo Automobile Club died. It's dead now. The club, if formed, will be an entirely new organization, a brand new one, with all the new owners of machines as members and as many of the old club men as desire to join. A. L. Spitzer and F. H. Dodge and other prominent enthusiasts are interested in the formation of the club.

Insists on Signboards—Judge J. D. Shafer, in the quarter sessions court of Pittsburg, has taken up the matter of placing signboards alongside highways throughout the county. When the constables were present the judge lined them up before him and instructed them in the future to report any violation of the law by the borough commissioners and township supervisors. The act of 1836 requires that supervisors shall cause signboards to be erected at the intersections of all public roads, the index hands pointing to the direction of such roads, and on which shall be inscribed in large and legible characters the name of the town or city to which such road may lead. If any supervisor shall fail to do this he shall forfeit $10. The court said that all such violations should be reported in the future. He mentioned that there are but few of these signs left in Allegheny county, which is a great hardship to travelers. The Pittsburg consulate of the American Motor League is credited with calling attention to this matter.

Will Cut Speed Limit—The commissioners of the District of Columbia are considering the advisability of amending the police regulations reducing the speed of automobiles and other vehicles from 12 miles an hour to 4 miles an hour when approaching transfer points and other places where travel is congested, particularly in front of the theaters.

Dedicates New Quarters—The Bay State Automobile Association dedicated its new quarters at the Auburndale Casino on Thursday evening of last week by holding of a gigantic smoker. The quarters are situated within 7 miles of Boston, along the beaten path of motorists, and are located on an eminence overlooking quite a territory. Here are to be found a comfortable cafe, private committee and officers' rooms, a large pool and billiard room and bowling alleys.

Accessory Show—Secretary A. M. Andrews of the proposed automobile parts, appliances and accessories exhibition, states that he proposes to hold the show in the First Regiment armory, Chicago, September 22-29 inclusive. There are 15,000 feet of available space, divided into 120 spaces of different sizes. Application has been made to Motor and Accessories Manufacturers' Association for a sanction. Secretary Andrews is located at 184 La Salle street, Chicago.

To Pick Up Glass—Acting upon a suggestion of the Automobile Club of Washington, the superintendent of the street cleaning department of the national capital has arranged to care for the removal of broken glass from the streets by sending out special messengers to collect the dangerous substances as soon as notification is received. So many automobile tires have recently been cut by broken glass in the streets that the club decided to secure the aid of the municipal authorities.

After State Dough—Samuel Huston, highway commissioner of Ohio, in his annual report to the governor, which was filed on the 14th of the month, asked the state for $150,000 as state aid in good road construction for 1906 and $200,000 for 1907. He recommends that the assistant commissioner, an office that has never been filled, be increased from $300 to $1,800, as the person filling that office must be experienced in road making and have a knowledge of geology, besides being a civil engineer.

Bay State Progress—The runs and tours committee of the Bay State Automobile Association is considering the advisability of holding a 1-day endurance or economy contest. This contest is to be held when the snow is on the ground and will be used as the means of developing the best snow-plowing machine owned by the club members. The scheme is to hold a run from Boston to Worcester or Providence and return and to award a silver trophy to the owner making the best showing for the entire distance.

Digitized by Google

AMONG MAKERS and DEALERS

NEW AND PRETENTIOUS DECAUVILLE AGENCY AND GARAGE IN NEW YORK

Is a Veteran—George Bennett, sales manager of T. B. Jeffery & Co., will complete his twentieth year of service under Mr. Jeffery on January 19.

Lands a Plant—The board of trade of Bradford, Pa., has induced the Amazon Rubber Co. to locate there. The concern manufactures automobile, bicycle and carriage tires and employs over 200 men.

Berkshire in Chicago—The Berkshire Automobile Co., of Pittsfield, Mass., will open a Chicago branch, having rented the present quarters of the Ford branch at 1413 Michigan avenue. The company will take possession of the place when the Ford people move into their new building—along the latter end of January.

Switch in Owners—Edward Inman and Joe Brown Connally have bought the interests of J. H. Nunnally, Ernest Woodruff and Will Kiser in the Atlanta Automobile Co. and have combined it with the White Motor Co. The name of the Atlanta Automobile Co. will be used and the concern will handle the White, Cadillac and Franklin.

Durphy a Systematizer—W. H. Durphy, manager of the Chicago branch of the Electric Vehicle Co., has written owners asking them to support him in his effort to clean out grafting among the chauffeurs. Durphy wants to establish a system in the Columbia garage requiring chauffeurs to register their comings and goings and to inform owners of the amounts of their supplies and repair bills.

Tire Suit—Charles Blake Cisco, assignee of the rights of the New York-Broadway Tire Co., has brought action in New York against the Goodyear Tire & Rubber Co. to recover $150,000 damages, alleging breach of contract. Judge Smith has issued a warrant of attachment against all the property of the Goodyear company in the state of New York. The New York-Broadway people claim they had a contract with the Goodyear company for tires for 2 years at a price that would allow them to undersell their competitors. Just as they were about to enter into a contract to supply a western maker with 11,000 sets of tires, they say they were notified that the contract had been abrogated.

Moline Deal—George E. Robertson has closed with the Automobile Exchange & Storage Co. for the agency for Moline cars for New Jersey, New York and Connecticut.

Cramer Leader—J. A. Cramer has been elected president of the Buffalo Automobile Trade Dealers' Association, with W. C. Jaynes vice president, Dai H. Lewis secretary, John J. Gibson treasurer and P. W. Eigner, E. C. Bull and N. P. Baker directors.

Tire Changes—The Hartford Rubber Works Co. has so changed its rims for 1906 that all standard makes of clincher tires will fit it. This is accomplished by having the rim edges or beads with a straight wall on one side and grooved on the other so that should a driver want to substitute a clincher tire for the Hartford Dunlop, it is merely necessary to reverse the beads. Both the Hartford clincher and Hartford Dunlop will be of the open-cure, wrapped-tread variety, but instead of vulcanizing the parts separately and then giving them one final cure, the whole tire will be vulcanized at one operation. In addition to this the tires are made and cured in the same shape the tire assumes when in service. This relieves the tension on the fabric and offsets any tendency it may have to split. No lugs will be employed to hold the Hartford Dunlop 1906 style of tire in place, but instead a light endless metal band or floating ring will be inserted between the tube and the edges of the tire. Should it be necessary for any cause to ride a tire flat, this band rests lightly on the inner edges of the tire and prevents creeping. This floating ring has another excellent feature in that it keeps moisture out of the tire. The special Sea Island cotton fabric incorporated in the tire will be considerably stronger than used in other years. A pure strip of Para rubber is placed next the outer layer of fabric, and before the rubber cover proper is applied a strip of fabric is incorporated which positively prevents what is known as shuffling or blistering.

Quaker Show Office.—C. I. Campbell, of Boston, who is to manage the local show in Philadelphia, will open offices in the Fidelity Trust building, on North Broad street, during the coming week.

Changes Name—The American Metal Wheel & Toy Co., of Toledo, O., has changed its name to the American Metal Wheel & Auto Co., and increased the capital stock from $100,000 to $150,000. The company manufactures a large number of toy automobiles for children.

Burke Moved to New York—W. W. Burke, who has been manager of the Boston branch of the Electric Vehicle Co., has been selected to replace Frank C. Armstrong as manager of the New York branch. Burke's successor in Boston has not yet been named.

Now Crouch & Co.—The firm of Alexander & Crouch of Chicago, manufacturers of of auto marine engines, reverse gears, propellers, etc.,. has been dissolved. Mr. Crouch, former partner and general manager of the firm, has made preparations to carry on the business on a much larger scale and in order to do so he has added a complete equipment of new machinery and tools, doubling his former capacity. The new firm will be known as Charles P. Crouch & Co., and is located at 472-484 Carroll avenue, Chicago.

Buffalo Deal—The Babcock Electric Carriage Co., just organized, has purchased the assets and good will of the Buffalo Electric Carriage Co. The capital has been increased and it is expected to turn out not less than 500 cars for 1906. Two or three new models will be added. The officers of the new company are: F. A. Babcock, president and general manager; F. L. Bapst, vice-president; E. R. Whitney, secretary and treasurer; directors, R. B. Adam, Harry Yates, Charles L. Williams, Samuel J. Dark, all of Buffalo.

No Delay—The Spicer Universal Joint Mfg. Co. states there will be no let-up in deliveries despite the fact it is moving into new quarters. Both the new and old factories will be operated until spring. With the new equipment it is expected that the capacity will be increased about 600 per cent, so that all orders can be cared for without it being necessary to work a night shift. More than half the new machines will be driven by individual electric motors and the entire factory will be driven electrically, either individual or in groups.

Eat Moose—The annual moose dinner of the Electric Vehicle Co.'s staff took place at Parsons' theater cafe in Hartford and was attended by forty of the officers, salesmen, foremen and factory managers. The dinner was declared to be of the "float feed ex-aspirating type." Drinks were labeled "76 test raw gasoline in fire balls or straight, three tremblers to man," and "Old Valvoline Brew in Kegs." The first edible was "Little Neck Cams, with Valve Push Rods on the side." Moose and venison were supposed to be "smothered in lock washers and Albany grease." There were shop hits and

Digitized by Google

the dinner was supposed to close with cigars labeled "Spitfires."

Metzger Out—W. E. Metzger, who has been one of Detroit's leading retail dealers in bicycles and automobiles for years, has given over the business to the Cadillac Automobile Co. of Detroit. Only the Cadillac and an electric vehicle will be handled. The company retains possession of the old premises on Jefferson avenue.

New Rubber Company—The Wright Rubber Co., capitalized at $1,000,000, has opened offices in the Blymer block at Mansfield, O. It proposes to erect a factory for the manufacture of artificial rubber. The inventor of the process is E. E. Wright, who claims that this artificial rubber can be vulcanized and that it will stand greater heat and cold without injury than the genuine article and that it can be produced in its crude state at one-tenth the cost of crude imported rubber. The company proposes to start with the manufacture of automobile and vehicle tires.

New Compound—The E. H. V. company will exhibit a new Compound model at the A. C. A. show, and at about the same time at the salesroom of its New York agents, Hatch & Co., 1655 Broadway. This rig will be a special combination car, with Victoria top, trimmed with leather or cloth, with front seat trimmed with leather or cloth, half Belgium pattern. This model will be known as Model K. It will be mounted on the regular 1906 Compound 12-15 horsepower chassis, and will be equipped with either double chain or shaft drive. Another new model to be known as Compound model 5, will be a light touring car, with non-detachable tonneau, seating five people, and installed upon the same chassis as the model H.

Pope Truck in Test—The Pope Mfg. Co.'s gasoline truck designed by Herbert W. Alden has been completed and the model is now on the road in a process of testing out.

Will Carry Commercial Line—The Weed Garage, of Toledo, O., has decided to handle commercial vehicles during the coming season. This is the first concern to go into the commercial line in that city.

Maxwell Limousine—The Maxwell-Briscoe Motor Co. announces it will put on the market after January 1 a new limousine body car, using the model H touring car chassis. The body will be finished in solid mahogany, with French plate glass trimmings.

Breaks into Chicago—The Hamilton Automobile Co., representing the Smith & Mabley Automobile Co., of New York, has opened in Chicago, occupying the premises at 1337 Michigan avenue, with J. W. Hayden, representing the Prest-o-Lite company, and H. F. Branstetter, Chicago agent for the Queen.

Still in Embryo—The impression has been circulated among the motorists of San Francisco that a new organization, the Northern California Automobile Dealers' Association, was formed some weeks ago. Such, however, is not the case, for at present the aforementioned organization is still only in contemplation. Some of the dealers have held a few meetings at which the restrictions against motorists using the ferry boats was earnestly discussed and the proposition of forming an association of the principal automobile dealers in the northern part of the state was broached, yet nothing further has been done in the affair.

Going in Style—R. E. Olds, president of the Reo Motor Car Co., has completed arrangements with the Seaboard Air Line for transportation to the Florida races for himself and a considerable party.

Decauville's New Home—The Decauville Automobile Co., of New York, successor to the Standard Automobile Co., took possession of its new building at Broadway and Fifty-sixth street this week. Here will be handled not only the Decauville and Franklin cars, imported accessories and supplies, and Gaulois tires but it has also taken the New York agency of the C. G. V. and the English Daimler. Other lines will be taken on later. The building is 50 by 60 feet and only three stories have been erected at the present time in order to get into the place as soon as possible. The garage is directly in the rear of the office building.

Indian Wigwam—The Hendee Mfg. Co.'s new motor cycle factory at Springfield, Mass., has been dubbed the Indian wigwam. It is of brick construction, four stories high, 150 feet long and 50 wide. On the first floor is the motor cycle and frame building and finishing department, metal department for tri-car seats and vans, tank and brazing departments, blacksmith shop, nickeling department and receiving and shipping rooms. The offices, machinery department and tool room are on the second floor. On the third floor are the carbureter, wheel-truing, assembling, testing-out and repair departments and stock room, while on the fourth are the enameling and upholstering departments.

THE READERS' CLEARING HOUSE

SYNCHRONIZED IGNITION

Chicago—Editor MOTOR AGE—What is meant by synchronized ignition? From time to time I have noticed reference to it but have never been able to have a good definition of it and its use.—R. F. C.

Synchronized ignition is made by having but one trembler coil in the electrical circuit to act upon each cylinder at the proper time, rather than the multiple coil with primary and secondary windings and the contact-maker for each cylinder. The winding is sometimes greater in one coil than another, or the contact makers are not evenly adjusted, which causes the spark to become uneven. With but one trembler coil it is necessary to have a high tension distributer for the greater voltage in this circuit, so much greater that a slight difference of resistance has no effect upon the efficiency of the spark.

REPAIRING WORN CASINGS

Park River, N. D.—Editor MOTOR AGE—Do you think I can prolong the life of tires that have some weak places, caused by the rim pinching them when bumped against stones or other hard substances, by cementing heavy canvas on the inside of the casing? I thought of putting in three strips—one on each side, and then a wider one in the center to overlap on the side strips. I think they would fit the casing better put in that way. What is your idea of what effect would it have on the tube?—SUBSCRIBER.

It is invariably poor policy to put any reinforcement in the shoe of a tire, especially by one who is inexperienced in tire making. The least particle of any hard substance will cause puncture, even a hard lump of cement. As a matter of fact, the rim should not cut or injure the shoe if the inner tube is inflated to the proper pressure. Of course, the tire is supposed to act as a cushion for all ordinary obstacles with which it may come in contact, but it should be pumped up so that the indentation will not be more than approximately a fifth the thickness of the tire.

MISSING EXPLOSIONS

Baltimore, Md.—Editor MOTOR AGE—Kindly answer the following questions through the Readers' Clearing House: Is it necessary or advisable to have a vent hole in the top of gasoline tank so that air can escape? When running at a high rate of speed my 9-horsepower motor, having suction intake valve, misses explosions. Is this due to the carbureter or the spring on the valve? What can be done to stop the intake valve from snorting?—F. L. L.

It is necessary to have an air escapement in top of the gasoline tank. There are various things that will cause the motor to miss an explosion, due both to the valve spring and carbureter. Try the carbureter by giving it a little more gasoline. Try all adjustable parts first, as the trouble may be located, thus saving considerable work. Then if the motor does not fire regularly examine the inlet valve spring. It may not be heavy enough for the action required at high speed; oftentimes the spring becomes weak through constant exposure to high temperatures.

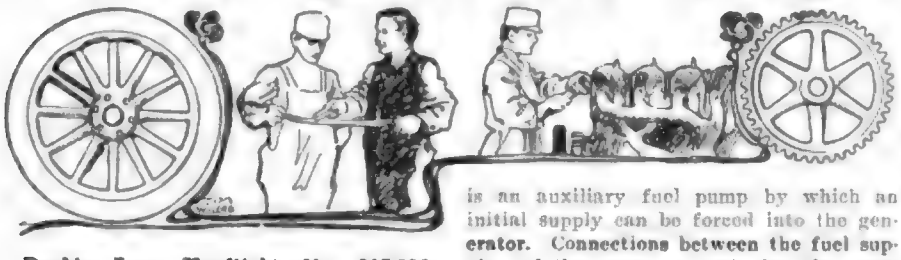
ADJUSTING CARBURETERS

Chicago—Editor MOTOR AGE—I have a new 5 by 5-inch opposed motor which I cannot get to fire correctly. I have a 1¼-inch Kingston carbureter and the intake pipes are equal in length. When one cylinder is adjusted for slow speed the other fires alternately, and vice versa; in other words, one cylinder requires a little more gasoline than the other, but when the spark is advanced and the throttle opened, the motor fires nicely. Do you know of anything I can do to make the motor fire evenly on slow speed?—Reader.

When a motor misses explosions on low speed it is invariably due to poor mixture. If the intake pipes are of equal length, the mixture at the carbureter must be the same for both cylinders. Therefore, adjust the air or gasoline until the explosions become regular with the motor running at slow speed, and the motor will fire regularly at high speed. Both air and gasoline may have to be regulated.

Digitized by Google

Current Automobile Patents

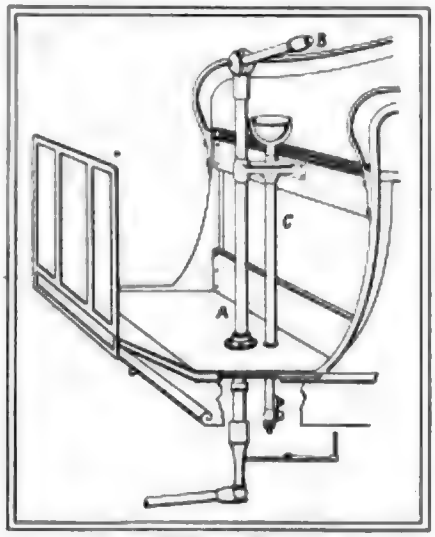


Double Lens Headlight—No. 807,296, dated December 12; to Nicholas Loewenstein, Philadelphia—The invention is a double lens automobile head or side light in which are combined two lens, the forward one A being cone-shaped and the other B, slightly to the back of it and much smaller in diameter, is in the form of a prolate spheroid. The reflecting surfaces of the two are practically continuities and in unbroken planes, the burner C of the lamp occupying the back part of the reflector and located entirely within it. In front of the reflector are several differential lens, one behind the other, the inner lens being supported by arms so that a comparatively unobstructed space exists in the casing around the periphery of the lens.

Combined Radius and Truss Rods—No. 806,798, dated December 12; to B. A. Gramm, Chillicothe, O.—In supporting the side pieces of his automobile frame the inventor makes use of an irregular block A beneath the center of each side piece of the frame and from the respective sides of this block extend a radius and a strut rod. The truss rods intended primarily for assisting the side pieces of the frame in carrying their load are connected to the bracket above the radius or strut rods, which connect the bracket with the front and rear axles. The strut rods serve only in taking axle strain off the springs, leaving the latter only to carry the weight of the machine and not to share the driving strain.

Steam Vehicle Control—No. 807,419, dated December 12; to Edward S. Clark, Boston—In controlling a steam automobile supplied with pressure from a flash boiler or generator the inventor uses a vertical steering post A with a horizontal lever B hinged to the top of it so that the lever can be swung upwards or form side to side of the post. A fuel supply controlling rod is placed parallel with the steering post and just back of the post is an auxiliary fuel pump by which an initial supply can be forced into the generator. Connections between the fuel supply and the pump are such that the pump and fuel rod are worked simultaneously by the pivotal movements of the steering lever.

Spring Throttle Valve—No. 807,144, dated December 12; to Benjamin F. Walker, Bridgeport, Conn.—The inventor's carbureter is conspicuous by having its

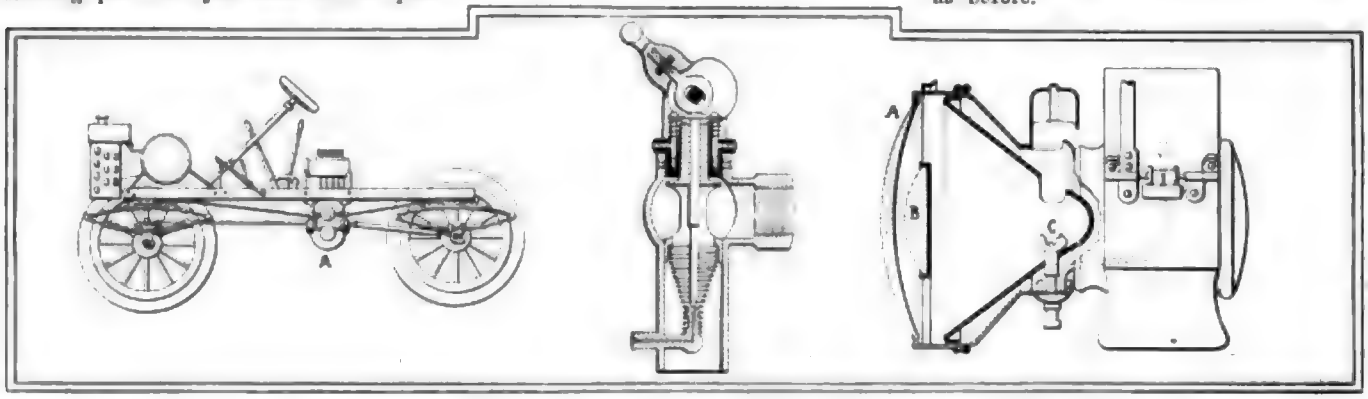


CLARK'S STEAM CONTROL

throttle in the form of a coil spring. The gasoline enters the base of the carbureter, the spraying nozzle being centrally located. Surrounding the nozzle are the smaller coils of a spring and as the air enters through the carbureter base it has to pass through the coils before it enters the mixing chamber and finally exits through a passage at the right of the motor. When the springs are depressed little air can pass through and when stretched, separating the coils, a free passage is offered. The compressing and stretching of the spring are accomplished by a cam action on the top of the device, a movement of the cam in one direction compressing the spring and in the opposite relaxing it, permitting it to come to its free and normal tension. In the top of the spraying nozzle is a depending check valve, which is also operated from the top of the carbureter. This check valve is raised and lowered by cam action and the two cam actions are so combined that a compressing of the coil spring is accompanied with a partial closing of the spraying nozzle, thereby limiting the gasoline supply and a liberating of the spring has the opposite result. In this way fuel flow is restricted on low and accelerated on high speeds.

Friction Drive—No. 804,421, dated November 14; to George W. Marble and William R. Donaldson, Chicago—This invention relates to a friction method of transmitting power from a gasoline engine to the front wheels of an automobile railroad wagon, the vehicle being specially intended for use on such roads. On the front axle near the center are opposing friction disks and between them is a friction wheel made slidable on the crankshaft from the motor, which is short and placed lengthwise on the car frame. The motor is pivoted so that the friction wheel can be moved to right or left to form a contact with one friction disk to drive the car ahead and to contact with the other for reversing. The motor pivoting is accomplished by a bracket fastened to a cross piece of the frame and at its other end forming a bearing for the entire top part of the cylinder, a similar bracket carrying the bottom part, both brackets take the form of large metal rings, with eye-holes for attaching to the motor.

Yieldable Gear—No. 804,778, dated November 14; to George W. Smith, Rockford, Ill.—In this invention two gears are shown in mesh, one of which is carried on a yieldable shaft. The hole in the gear for receiving the shaft is cone-shaped instead of having a flat surface, and the shaft is concaved, half of the concave being rigid with the shaft and the other part held to the gear by a coil spring. Should any obstacle such as a piece of iron get between the gears its pressure on the one with the yieldable bearing will cause one part to be pushed out against the action of the spring, thereby preventing gears being broken, and as soon as the obstruction passes through the gears the spring will force that part back in position, causing the gears to mesh closely as before.



GRAMM'S DOUBLE STRUT AND TRUSS ROD SCHEME — WALKER'S SPRING THROTTLE — LOEWENSTEIN'S DOUBLE LENS LAMP

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Lincoln, Neb.—The Glide agency has again been taken by Shore & Beach.

Buffalo, N. Y.—J. A. Cramer, 737 Main street, will handle a line of sundries and will also do a jobbing business.

Waldwick, N. J.—M. Toole, of Undercliff, has had his garage completed at a cost of $1,200.

New York City—The American Automobile & Storage Co. has the agency for the Premier for New York and vicinity.

Chicago—C. H. Plumb, formerly of the Mead Cycle Co., has been appointed sales manager of the Holmes-Schmidt company.

Newark, N. Y.—An automobile factory is about to locate here. The industry is being undertaken by A. H. Morn, of Rochester.

Pittsburg, Pa.—The Liberty Automomobile Co. will enlarge its building as soon as it can secure the property it desires. Plans have already been made and contracts let.

Los Angeles, Cal.—The Reo branch will remove to its new building at 633 Grand avenue. The company is now located at 420-422 South Hill street, under the management of L. T. Shettler.

New York City—La Mott Hartshorn has been appointed receiver for the Interborough Vehicle Rubber Supply Co. on the application of two of its directors, who ask for a voluntary dissolution of the corporation.

Hartford, Conn.—The Remington Oil Engine Co., of Stamford, has filed a certificate of incorporation, with a capital stock of $100,000. The concern will manufacture and deal in oil and gas motors and engines and build and operate vessels, it is announced.

New York City—An automobile garage is to be opened at Broadway and Sixty-second street, which will be devoted entirely to the storing and repairing of cars. It is to be operated by the Alborak Auto Co. and will have accommodations for about 175 cars.

Boston, Mass.—Ralph F. Coburn, who has been connected with the Radcliffe Motor Co., has become identified with the Morrison-Tyler Co., and will handle the Maxwell for the latter concern. This firm is temporarily located on Scotia street, pending the completion of its building.

Indianapolis, Ind.—The Windsor Automobile Co., incorporated under the laws of South Dakota, with a capital stock of $250,000, has been given a permit to do business in Evansville. The total amount of the capital stock is held in Indiana and Willis M. Copeland is given as the Indiana agent.

Syracuse, N. Y.—Bacon, Chappel & Co., the dry goods merchants, have leased the Marshall building in North Salina street and will open a garage with H. D. Cranston, formerly with the R. M. Cornwall Co. as the manager. The company has taken the agency for the Rambler line and will have a display at the new store after December 20. Its territory includes the counties of Onondago, Madison, Oswego and Cortland.

Utica, N. Y.—The Utica Motor Co. has secured the agency for the Stevens-Duryea.

New York City—Repairs are under way at 1723 Broadway, which is to be the headquarters of the Ford company.

Los Angeles, Cal.—The Success Automobile Co. and Smith & Anthony, the Elmore agents, have been admitted to membership in the automobile association.

New York City—Hatch & Co., the New York agents for the E. H. V. Co., of Middletown, Conn., maker of Compound cars, are now established in their new headquarters at 1655 Broadway.

Philadelphia—F. W. Stockbridge, formerly manager of the Reo Motor Car Co.'s branch, has joined forces with the Foss & Hughes Co., representatives of the Pierce-Arrow.

Youngstown, O.—The Mahoney Motor Car Co., organized here about a year ago with a capital stock of $50,000, has announced that, owing to the demands of labor making it impossible for the company to manufacture automobiles, it will go out of business. The company controls a patent for an air-cooling motor.

Fargo, N. D.—Haug & Blake will continue to handle the Glide line in 1906.

Newark, N. J.—The Austin Automobile Co. has taken the local agency for the Ford car.

Boston, Mass.—C. H. Blaney is the new representative of the Corbin Company.

Middletown, Conn.—F. L. Caulkins will establish a garage here in a new building which will be put up for the purpose.

Sycamore, N. Y.—Richard E. Kolbe, of Syracuse who is fitting up a garage in East Water street has taken the agency for the Ford Line.

Boston, Mass.—The Fisk Rubber Co., maker of the Fisk automobile tire, will occupy the store on Columbus avenue recently vacated by the Oldsmobile company.

Davenport, Ia.—The Davenport Automobile Co., which will handle the Pope-Toledo and Northern cars during the coming season, has leased the building on Main street, formerly occupied by Bayliss & Eagal, and will move into the premises before the first of the year.

Los Angeles, Cal.—A new automobile distributing company, to be known as the Success Automobile Co., was recently organized by some of the leading men of the city. Mr. Sharks, general manager of the Winton branch, is one of the prime movers in the organization.

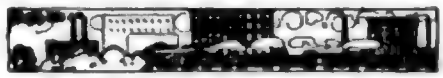
New York City—The latest in foreign cars to be brought here is the Zust, which is manufactured in Italy. The sole American agents are R. Beetelli & Co., who have temporarily located at 124 East Nineteenth street.

Bridgeport, Conn.—Arrangements have been made by the H. O. Canfield Co., manufacturer of molded rubber goods for mechanical purposes, for its removal from the present plant to the factory on Housatonic avenue, formerly occupied by the Nonpareil Cork Mfg. Co.

Milwaukee, Wis.—The Welch-Estberg Co., with a capital stock of $50,000, will open an automobile agency in the new three-story building at Grand avenue and Seventh street in the spring. It will handle commercial and pleasure automobiles and supplies of all kinds.

Springfield, O.—Clinton P. Grant has been appointed receiver of the Commercial Transit Co. on application of Joseph Lesner. This company was organized last summer to operate an automobile line between this city and Jamestown. It had a capital stock of $10,000, and the cars were furnished by a Detroit firm.

New York City—The Napier Motor Car Co. will occupy its original location at Fiftieth street and Broadway in the near future. O. B. Cole, of the Napier company, has been here for several days to make the necessary arrangements for the reopening of the branch, which was temporarily closed last year, owing to a shortage of cars.



LATE INCORPORATIONS

Augusta, Me.—The Pontiac Motor Car Co. has been incorporated with a capital stock of $25,000, to deal in automobiles.

Buffalo, N. Y.—The Motor Vehicle Garage Co. has been incorporated with a capital stock of $20,000, and will conduct an automobile garage.

Buffalo, N. Y.—The Cleveland Cycle & Auto Co. has been incorporated and will manufacture automobile motors, engines, etc. Capital stock, $2,500.

Trenton, N. J.—The New Jersey Touring Co. has been incorporated with a capital stock of $60,000. It will operate and build self-propelled vehicles and vessels for land or water.

New York City—The Franklin Automobile Agency has been incorporated with a capital stock of $500.

New York City—The Gaulois Tire Co. is a recent incorporation. Capital stock, $500.

New York City—The C. A. Mezger Co. has been incorporated to manufacture spark plugs and motors. The capital stock of the company is $5,000.

Albany, N. Y.—The Palace Motor Car Co. has been incorporated with a capital stock of $15,000.

Newark, N. J.—The Austin Auto Co. has articles of incorporation filed with the county clerk. Capital stock of the company is given at $25,000, of which $3,000 has been paid in.

Jersey City, N. J.—The Pneumatic Ball Tire Co. has been incorporated with a capital stock of $3,000,000.

New York City—The Commercial Motor Car Co. has been incorporated with a capital stock of $10,000.

Cleveland, O.—The Appel Spherical Motor Co. has been incorporated with a capital stock of $150,000.

New York City—The Zim-Rock Motor Car Co. has been incorporated with a capital stock of $15,000. The company will establish an automobile agency.

Boston, Mass.—The Harvard Automobile Co. has been incorporated to deal in automobiles, with a capital stock of $15,000.

Albany, N. Y.—The Dac Automobile Supply Co. has been incorporated to manufacture and deal in automobile parts. The capital stock of the company is $500.

Digitized by Google

WINTON MODEL-K

WHAT ABOUT DEPRECIATION?

A motor car becomes SECOND HAND, in value, when the Owner has driven it the first time

After that, whenever you sell it, you are unlikely to get as much as you paid for it.

The difference between the price you pay for a **new** car and the price you get for the **same car second-hand** represents DEPRECIATION.

Think about that when buying.

It is important to buy a car that will have a high value when second-hand.

Because you don't know how soon **you may want to sell it.**

You may want to sell upon buying a later and better car.

Or you may want to sell for any one of a dozen reasons that will come to mind when you think about it.

Good business judgment, therefore, tells you to buy a car that will Depreciate but little.

Some cars Depreciate **fast.** Notably under-powered cars, carelessly made cars, and cheaply constructed cars; cars of poor material and poor workmanship.

Some cars Depreciate **more** than others. Among these are fancy-priced machines. In buying them you pay heavy tribute for frills and an alleged "exclusiveness," which have absolutely no actual value and that bring absolutely no return in second-hand sales.

Remember this, too—other things being equal, you can always get more money—a greater percentage of purchase price—for a car of **good reputation** than for one of Unknown, Doubtful, or Poor Reputation.

Reputation is the result of **Past Performances.**

Past success in making runabouts does not mean present skill in making touring cars. And vice versa. Just remember **that.**

Note that the new WINTON MODEL K Touring Car is made by a company whose reputation is based on the long-time manufacture of **successful** Touring Cars.

Observe that the Winton Model K sells at $2,500 and is not equalled **anywhere** for $3,500.

THAT'S $1,000 SAVED ON THE PURCHASE PRICE.

AND $1,000 SAVED ON POSSIBLE DEPRECIATION.

The new Winton Model K reduces Up-Keep Expenses to the rock-bottom minimum.

Let us tell you how and why.

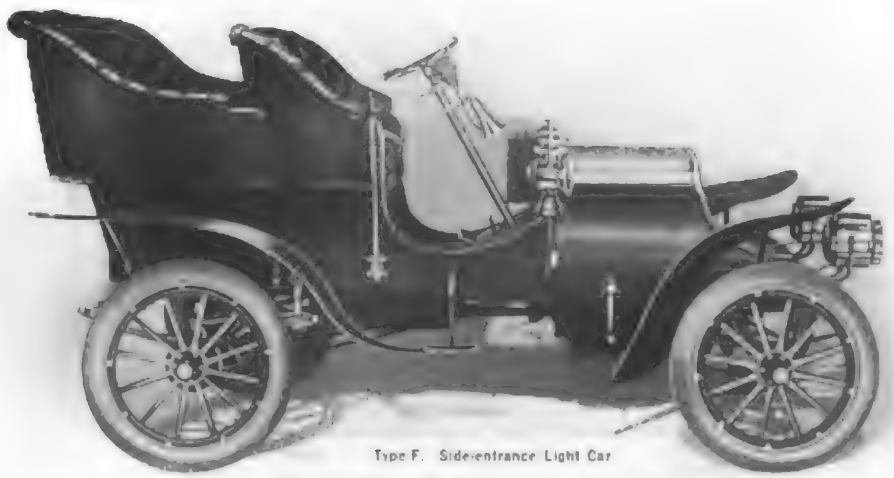
WINTON MODEL K—Plenty of reserve power. Easy of manipulation. Quiet running. Winton Comfort Features make riding delightful. Has every feature that a highest-grade car should have. $2,500 f. o. b. Cleveland

THE
WINTON MOTOR CARRIAGE CO.
Member A.L.A.M. CLEVELAND, O., U. S. A.
CATALOG NO. 2 IS READY

We shall exhibit in New York at the Madison Square Garden Show ONLY, Jan. 13-20, 1906

Digitized by Google

FRANKLIN



Type F. Side-entrance Light Car

Four passengers. Side entrance through tilting front seat. 14 "Franklin horse-power." 4-cylinder air-cooled engine. Wheel base, 84. Weight, 1,275 pounds. Framed for folding top. Speed on high-speed clutch, from 5 to 30 miles per hour. Price, $1,750, with either fixed or detachable tonneau. Without tonneau, $1,550. Tonneau, $150 extra.

Type F is a wonderfully strong, lively, powerful light car of a design specially preferred by many motorists.

Its comparatively short wheel-base for a side-entrance car gives unusual strength and stability; while its direct two-speed transmission exactly suits many who do not want a sliding gear.

It has all the distinctive Franklin features which produce the well-known Franklin touring ability and reliability.

Franklin air-cooling makes every Franklin an all-the-year-round car.

No weather can freeze it night or day.

Leave it standing anywhere, any time; and it is ready on the instant to make its best pace from the word "go."

"Franklin horse-power" is road-power. Not a mere figure-rating. It is real working force delivered at the rear wheels at regular average speed on all sorts of roads.

Four Models for 1906

Type H. Six-cylinder, 30 Franklin horse-power, shaft drive, 2,400 pounds, 50 miles per hour. $4,000.

Type D. Four-cylinder, 20 Franklin horse-power, shaft drive, 1,800 pounds, 45 miles per hour. $2,800.

Type G. Four-cylinder, 12 Franklin horse-power, shaft-drive, 1,400 pounds, 35 miles per hour. $1,800.

Type E. Four-cylinder, 12 Franklin horse-power, chain-drive, 1,100 pounds, 40 miles per hour. $1,400.

We exhibit in Madison Square Garden, New York, Jan. 13-20, 1906

H. H. FRANKLIN MFG. CO., Syracuse, N. Y. **M. A. L. A. M.**

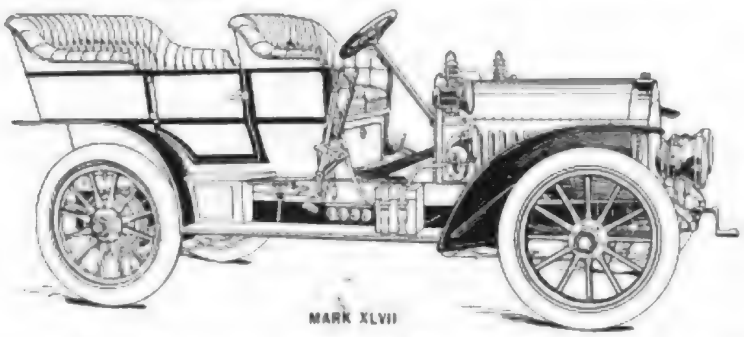
"The Motor Car of the Future"

Digitized by Google

Columbia

Gasoline Cars for 1906

ARE built of the best materials in the world under methods and processes more advanced than those employed in any automobile factory other than our own. No consideration of the cost of production has been permitted to interfere with making perfect every part and piece of each model, whether pertaining to mechanism, bodywork or general equipment. The expense of making the crankshafts, for instance, is six times greater than that of any previously made in this country. We guarantee that these cars, each according to its power and place, will yield the greatest things possible in motor service.



MARK XLVII

MARK XLVII 40-45 h.p. four-cylinder motor under forward bonnet; sliding gear transmission, four speeds and one reverse; jump spark ignition from storage battery; new pattern automatic carburetor; special chrome-nickel steel gears, axles, crankshaft and jackshaft; crankshaft machined cold out of solid block; double chain drive; I-beam front axle forged in one piece; pressed steel frame; 108-inch wheel base; seat starting; new pattern brakes. Price, with standard body.....$4,000
With 112-inch wheel base, Royal Victoria, Double Victoria, Limousine or Landaulet body.....$5,000 to $5,500

MARK XLVI An entirely new model. 24-26 h.p. four-cylinder, vertical water-cooled motor; shaft drive, sliding gear transmission; three speeds and reverse; low tension make and break magneto current ignition; special chrome-nickel steel gears and shafts, crankshaft machined cold out of solid block; I beam front axle forged in one piece; rotary pump oil lubrication; pressed steel frame, 96-inch wheel base; double side entrance body seating five passengers. Price.....$3,000

MARK XLIV-2 Perpetuating Mark XLIV, one of the most successful of medium-weight 1905 cars. 18 h.p. double opposed horizontal motor under forward bonnet; frame length increased eight inches, giving ample room forward of each seat; wheel base increased to 90½ inches. Rear seat widened five inches; double side entrance body. An ideal family car, which will climb any hill and maintain a speed of 35 miles an hour on the level. Price.....$1,750

Columbia Electric Carriages

Victoria-Phaetons, Runabouts, Broughams, Landaulets
Hansoms, Surreys, Delivery Wagons, Trucks

Separate catalogues of Columbia Gasoline Cars, Columbia Electric Carriages and Columbia Electric Commercial Vehicles will be sent on request

ELECTRIC VEHICLE COMPANY, HARTFORD, CONN.

New York Branch: 134-136-138 West 39th St. Chicago Branch: 1332-1334 Michigan Ave. Boston: Columbia Motor Vehicle Co., 74-76-78 Stanhope St. Philadelphia: Pennsylvania Electric Vehicle Co., 250 North Broad St. Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave. Paris: A. Bianchi, 194 Boulevard Malesherbes.
Member Association of Licensed Auto Mfrs.

Digitized by Google

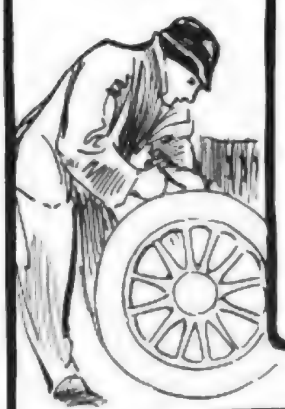
EVERYBODY WORKS BUT FATHER— HE DRIVES A

CADILLAC

Model M. Single Cylinder Car, $950.00.

AND THERE'S A LOT OF TRUTH IN THIS, AT THAT

1906 ANNOUNCEMENT SOON



CADILLAC MOTOR CAR CO.
DETROIT, MICH.

Members of Association Licensed Automobile Manufacturers.

Digitized by Google

The Kansas City Car
The Latest Surprise

CURTAIN
RISES
NEXT
WEEK

KANSAS CITY
MOTOR CAR CO.
KANSAS CITY, MO.

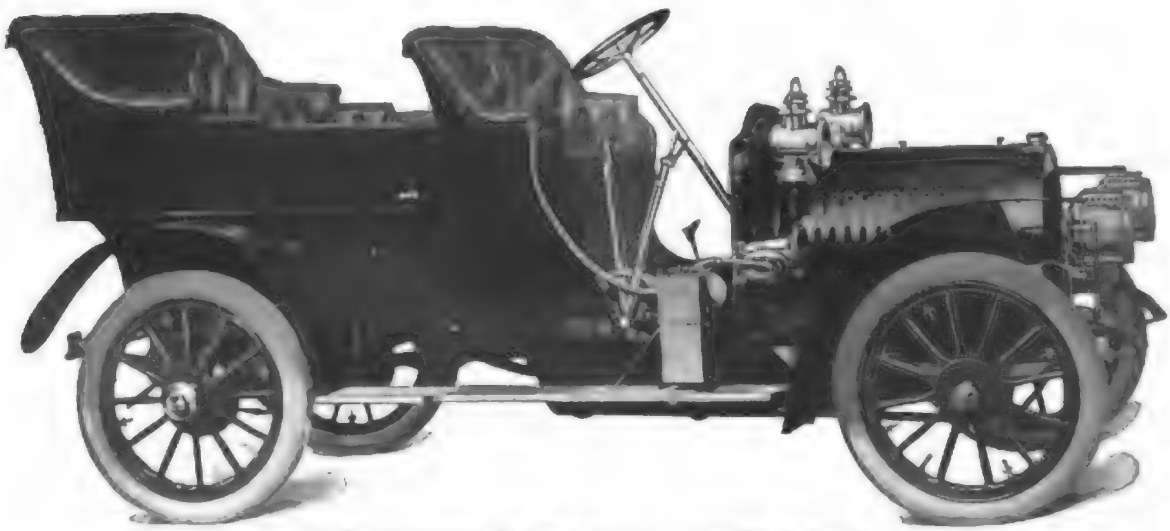
Digitized by Google

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, bevel gear drive. Very large and roomy, full aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Guaranteed free of repairs for one year

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase. unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

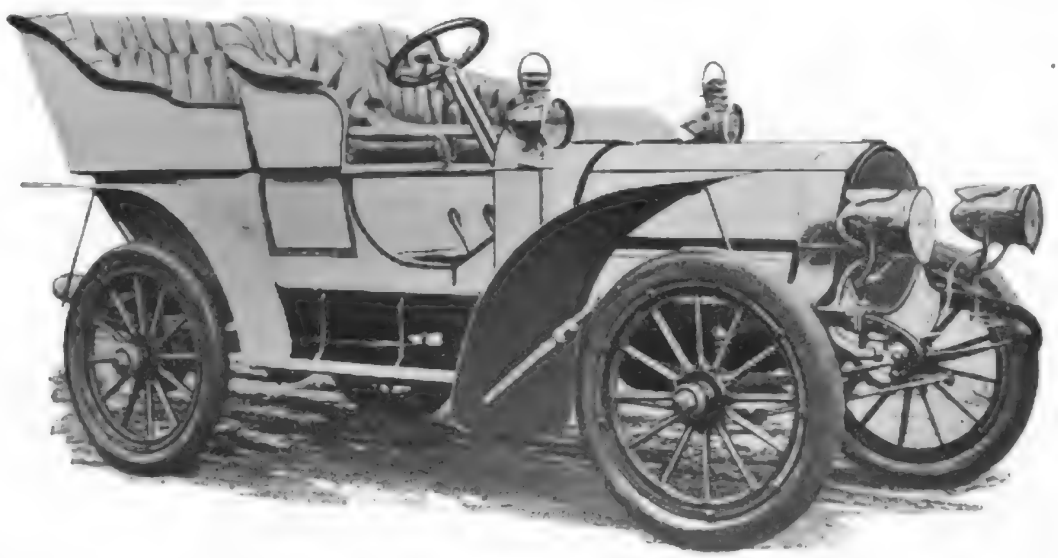
THE RAINIER COMPANY, Broadway, Cor. 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wanted in Unassigned Territory

Digitized by Google

Starts from the Seat No Crank Necessary
A Foot Lever Does It



DUQUESNE

4-CYLINDER 4-CYCLE 16-21 HORSE POWER

SIMPLICITY must be the watchword of automobile builders wishing to construct a car that will stand the test.

Air-cooling is the simple way, because it does away with water tank, water pipes, radiators and pump; lightens the load on the tires and eliminates freezing in cold weather.

The DUQUESNE is not a racing car. It was designed especially to stand hard usage. Will take the ordinary country roads at from five to twenty-five miles an hour with five passengers. Will climb ordinary hills on high speed and any hill on low speed, and on paved streets and level roads will do forty miles an hour.

Direct drive with vital parts encased and running in a bath of oil is superior to the chain system with "sand shower" lubrication.

Starting the engine with a foot lever is better than the old style of "cranking.

The DUQUESNE motor is air-cooled; requires no cranking; starts from the seat by a foot lever a lady can start it.

Weight, 1,750 pounds ***Price, $2,000***

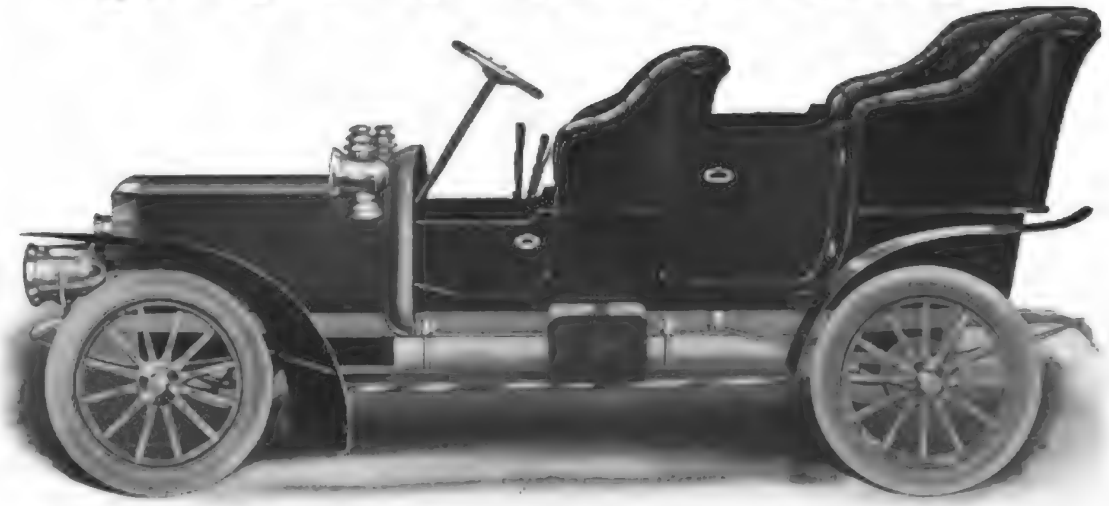
We are offering a very attractive agency proposition. Write.

Duquesne Construction Co.

JAMESTOWN, N. Y.

Digitized by Google

Aerocar



The Car for today—tomorrow and years to come.

Built by Practical Men

The Aerocar comes as the fulfillment of all that has been proven best in the air-cooled motor car. It represents the efforts from years of constant experimenting, testing and proving—a motor car of enduring serviceability—superior in mechanical design and construction, and carrying all the luxury and beauty in modern motor car equipment.

It is the only air-cooled motor car which overcomes all obstacles and objections in practical test.

The motor is the very soul of an automobile, and while the **Aerocar** is ideal in the graceful lines of body, in its roomy luxuriousness and elegance of equipment, it is in the air-cooled motor that its distinguishing superiority lies. Its motor is of wonderful efficiency—it is the crowning result of ten years constant effort along most practical investigation, studying and experimenting with all the adopted methods and designs of air-cooled motors, selecting the best of each, improving and adding to, until we have for the **Aerocar** an air-cooled motor which may rightly be called perfect in operation and for satisfactory results—always ready, night or day, in the hottest of mid-summer or the coldest zero of mid-winter, to meet every reasonable demand.

The Aerocar **1906.** 22-26 h. p. Four cylinders. Five passengers. 45 miles an hour. 104-inch wheel base. Shaft drive. Sliding gear transmission. Three speeds and reverse. Perfect disc clutch. Hollow steel dash. Four-sight lubricator on dash. Tool box on running board. 34x4 tires. 9-inch road clearance. Weight 2,000 pounds. Fully equipped, ready for the road, including two large gas headlights, **$2,800 f. o. b. Detroit.**

Ready and anxious to demonstrate any time or all times.

Deliveries. Ready to deliver cars February.

Will be exhibited and demonstrated at the Automobile Shows in New York and Chicago.

The dealer who has the selling agency of the **Aerocar** will have a gold mine. Territory being rapidly taken up. If interested write us promptly.

The AEROCAR COMPANY, Detroit, Mich.

Digitized by Google

About this time every year

the various manufacturers issue announcements giving the details of their "next year's" productions and these announcements give a lot of inside information to the man who takes time to dissect them and read them carefully.

The improvements mentioned in these announcements can be divided into two classes: FIRST, the correction of MISTAKES, and SECOND, the betterment of parts of the car which, while not perfect, were still giving satisfaction.

When we say MISTAKES in design, we have reference to such things as breakages of axles, crankshafts, etc., overheating, too little power and too much weight, sagging of the pressed steel frames, defective brakes, faulty weight distribution on the tires, etc. We call such things MISTAKEC because a thorough trying out of the experimental cars should have uncovered them. Now the manufacturer who stands back of his product must make good on such of these items as come under the head of Breakages, and the making good on anywhere from 300 to 1,000 cars is an expensive proposition—may be $25,000.00, may be $100,000.00. It's almost superfluous to observe that no manufacturer relishes this "making good" expense, and they are all doing all in their power to avoid it by building two or three experimental cars and running them several months in order to uncover these MISTAKES. Yet, in spite of this trying out that each gives his design, the public is sure to find blow holes that his trying out failed to indicate.

Few know that the preliminary expense of making drawings, patterns, tools, dies, jigs, a couple of experimental cars, etc., amounts to about $50,000 for each model. (If the manufacturer is making three models this preliminary cost is multiplied by three.) If the MISTAKES uncovered by the public during a year's use are not numerous nor serious, the manufacturer corrects them and retains the balance of the car for another season. If the MISTAKES are really serious, he abandons the whole model and brings out a new one.

Practically all automobile purchasers are interested less in the size, speed or first cost of a car than they are in learning whether its performance over a long term of months is going to give them pleasure or annoyance, or, in other words, they want to find out the weak points of the car; and if the manufacturer builds a couple of experimental cars and runs them several months in the hands of skilled men and yet fails to discover things that the public afterwards finds out for him (more or less at the public's expense), how much dependence can the public place upon his assertions of the good qualities of such a new model?

The point that all the foregoing leads up to is this: That the man who wants to discover the weak spots in the Stevens-Duryea is not forced to depend upon the statements of the manufacturer as based upon the performance of a couple of trial cars. No!—he can get accurate information from between 350 and 400 owners of these cars who have driven them thousands of miles over all sorts of roads. Does he want to know whether the axles are strong, whether the brakes are good, whether the car has just as much power, is just as quiet and free from rattle after a year's use; whether our claims as to freedom from tire trouble are actual fact; whether the Three Point Support of the Unit Power Plant is as good as we state; whether the bevel drive gives trouble; whether the clutch is a success; what the repair bills and tire bills are per thousand miles? We repeat, if a purchaser wants this information about the Stevens-Duryea he gets in 1906, all he need do is to look up the performance of the car during 1905, because not a single one of these mechanical features has been changed for 1906. They have not been changed because all the hammering about that the 350 owners of these 350 cars could give them did not uncover any defects. There were no defects because three years were taken to the preliminary development of this car.

J. STEVENS ARMS & TOOL CO.

705 MAIN STREET CHICOPEE FALLS, MASS.

Member Association Licensed Automobile Manufacturers.

Digitized by Google

SCHEBLER

STANDARD of the WORLD

THE HEART of the AUTOMOBILE

THE ANSWER *to the* CARBURETOR QUESTION

WHEELER & SCHEBLER, Mfrs. Indianapolis, Ind. U. S. A.

P. J. Darxy, Factory Representative, 611 Wabash Ave., Chicago, Ill.

Agencies in all the Principal Cities of the World

I. J. Edmund	44th St. and 8th Ave., New York City
Locomobile Supply Co.	Chicago
Automobile Supply Co.	Chicago
Buckley-Baldwin Co.	Chicago
L. H. Bedelhof	36 Green St., Malden, Mass.
Jos. Brassard	Central Falls, R. I.
Ellsworth Foundry & Machine Shop	Ellsworth, Me.
National Electric Supply Co.	Washington, D. C.
Smith Electrical Engineering Co.	Watertown, N. Y.
The Wallace Bros. Co.	Norfolk, Va.
N. Philadelphia Auto Station	2125 N. Broad St., Philadelphia
F. C. Bowles	502 Baronne St., New Orleans
Consolidated Supply Co.	Denver
Cornelius & Lyon Motor Supply Co.	701 Golden Gate Ave., San Francisco
Los Angeles Auto Co.	Los Angeles
McCulloch & Boswell	Winnipeg, Man.
Wilson & Co.	Ottawa, Ontario, Can.
Canada Cycle & Motor Co.	Toronto Junction, Can.
Schuman Carriage Co.	Honolulu, H. I.
Turnbull & Jones	Dunedin, N. Z.
Geo. Scott & Co.	70 Leicester St., London, England

Digitized by Google

Great Clearance Sale!

We are now adding a third story to our building and we need the money that is tied up in some forty machines that have accumulated in the past year. These are going to be sold at once. Please look over the prices and compare them with others.

Please note that when we say a machine is in good condition it is just as represented. When we say the tires are good, we mean GOOD, not leaky and worn out. We make it a point to trade only for machines that are in good condition, or that can be put in good condition in our repair shop before they are sold.

We have the following machines to offer at bargain prices:

Pope-Toledo, 1904, rear entrance. Model was rebuilt and repainted and made like new at factory this fall. New Continental tires, engine and entire car in A1 shape, ready for a 500-mile drive. Car has Prest-O-Lite tank, a $100 pair of front lamps, and a four chime Gabriel horn. Price $1,500.

Ford, Model F. One sample car new from factory in November. List price $1,200. Car has tonneau and Fisk tires. Our price $700.

Ford, Model C, new, came in same as car above. Our price $600. Both these cars have searchlights and Prest-O-Lite gas tanks.

Motor Boat, 25 feet. Dolphin lines in hull, 20 h. p., four cylinder Premier water-cooled engine. Boat is like new, has only been used about three months. Has double divided, automobile seats, wheel steering. Will sell on guarantee to make speed of 14 miles per hour. Boat cost $1,350. Owner now having make a 40-foot boat with same engine and design. Will sell old boat for $600.

Yale, 1904, 12 h. p. double cylinder opposed, tonneau detachable; finish, body dark blue, gears cream, paint like new, 32x4 clincher tires, A1 shape. A handsome and stylish little car that is a bargain at $500. Will guarantee in first class condition and ready for a 100-mile drive.

Winton, 1904, 24 h. p. double cylinder opposed, fine canopy top and glass front, paint like new, new tires on rear, 34x4½, front tires A1, fine reed baskets costing $100 per pair on the sides, a fine $50 searchlight and two front 8-inch lamps costing $80, a fine tail lamp, golf basket, rain apron, etc. Car used less than 800 miles, looks like a new car, will guarantee 35 miles per hour with load. Car cost complete $2,890. Our price $750.

Winton, 1903 Model C, brand new finish, special dark blue and white gears. Regular price $1,800. Our price $950.

Winton, 1905 Model A, 40 h. p., finish A1, two new rear tires fitted with Sampson covers, one searchlight, two headlights and oil lamps, electric flash lights on rear, fine cape top. Car just overhauled and in perfect condition. Will guarantee 48 miles an hour with a load of five. Car cost complete $4,100. Our price $1,500.

Pope-Toledo, 1905, a brand new sample, front entrance, fitted with searchlights, gas tank, full leather Victoria top, $50 brass bound patent leather trunk, trunk irons. This car was received October 15, on a special order for a member of our firm. On October 25 we decided to give up the Pope line. This car on hand, list price complete $3,590. Our price $2,590.

Pope Tribune, single cylinder, 5 h. p., bevel drive, three speed transmission, engine under hood and vertical. Used only about 60 days. A1 shape. Price $200.

A new 1905 Olds light touring car. Regular price $750. Our price $500.

1905 Olds tonneau, used two months. A1 shape from top to bottom, ready to deliver at any point in the state on an hour's notice. Regular price $950. Our price $500.

1903 Olds in good shape for $200.

1904 Franklin with tonneau, in perfect condition from top to bottom. In every day use. Owner wants big car. Price $850.

1905 Premier, with cape top and tonneau, 16 h. p., air-cooled, new tires all round. Run less than 1,200 miles. Car looks brand new. Price $1,000.

Olds 1904, clincher tires, $375. Machine practically new.

1903 Winton with searchlights, fine baskets, rain aprons, gas tank, new tires all around, 4½ inch Fisk on the rear wheels. Machine is a splendid bargain at $875.

1903 Winton of the same general description, has been used less than 2,000 miles. $950.

Premier, 20 h. p., two cylinder, water-cooled, bevel drive. Fast and powerful car for $300. The car is new.

National Electric, elegant condition, except the batteries, $175.

Waverly Electric, good condition except the batteries, $100.

Waverly Electric with top, wire wheels, new clincher tires all around, good batteries, will run 25 miles on one charge, $300.

Packard, single cylinder, 15 h. p., large tonneau, good 32x4 Diamond clincher tires all around, splendid finish, lamps, etc., in A1 shape. A very good cheap car for some one who does not care for speed, but wants service and reliability. $450.

Haynes-Apperson, early 1903 model, double cylinder, 12 h. p., good leather top, folding front seat, new tires, new paint. Engine and all overhauled in good shape. A splendid bargain at $400.

Haynes-Apperson, wheel steering, 3 extra tires, same model as above, $450.

Haynes-Apperson, like the above, but not as good tires. Tires are in good condition, but are second hand, good leather top, $400.

Please note that all these machines are marked from 15 per cent. to 25 per cent. less than they are worth in order to move them quick for cash.

TERMS: We will ship any of the above on receipt of enough to guarantee freight, balance collect against bill of lading.

FISHER AUTOMOBILE COMPANY

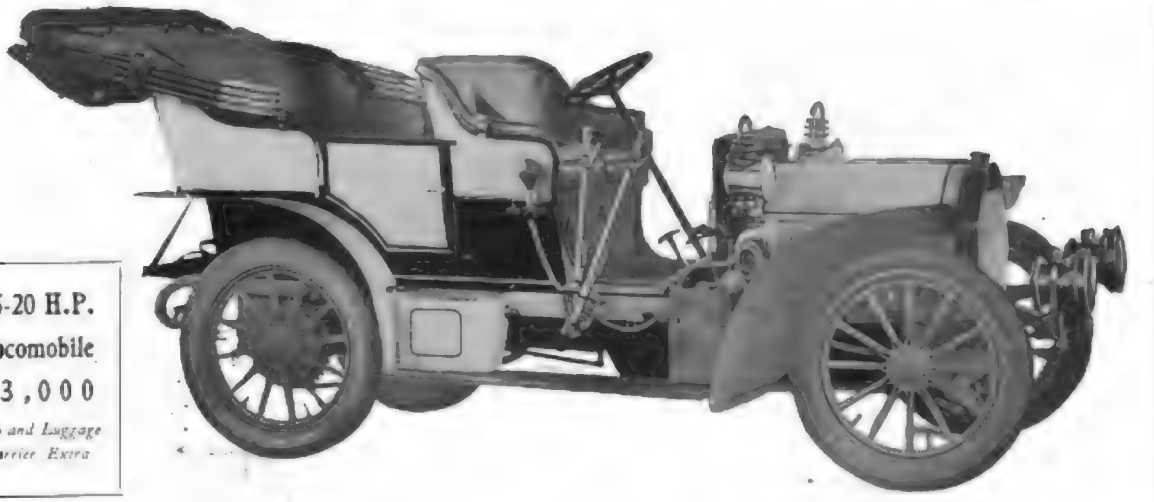
330 North Illinois Street, INDIANAPOLIS, INDIANA

Digitized by Google

Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., $3,000, 30-35 H. P., $5,000, both with complete touring equipment



15-20 H.P.
Locomobile
$3,000
Top and Luggage Carrier Extra

TYPE "E" Locomobile 15-20 H. P.

PRICE—$3,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 3¾ inch bore, 4½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—32x4 inches on all four wheels.
WHEEL BASE—93 inches.
CONTROL—Gas and spark levers on steering wheel.

TYPE "H" Locomobile 30-35 H.P.

PRICE—$5,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break, with iridium contacts.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Is placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—34x4½ inches.
WHEEL BASE—106 inches.
CONTROL—Spark and gas levers on steering wheel.

The Locomobile Company of America, Bridgeport, Conn.

NEW YORK, 76th St. and Broadway.
PHILADELPHIA, 240 N. Broad St.

Member Association Licensed Automobile Manufacturers.

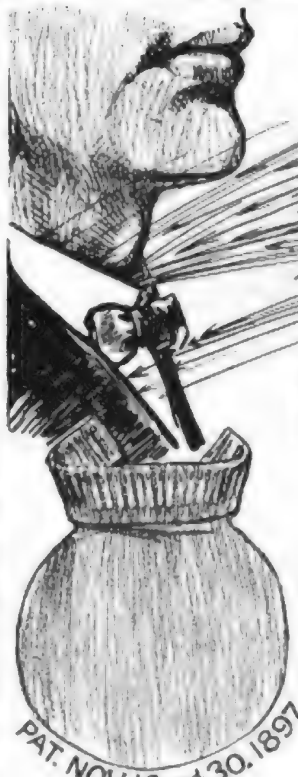
BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

WAY'S MUFFLER

PAT. NOV. 16 and 30, 1897

WHICH WAY DO YOU WANT IT?



THIS IS THE WAY YOU WANT IT

An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct.

Either Protect Your Throat

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

WAY'S Muffler

is a perfect throat and chest protector.
Comes with or without ear tabs as preferred.
Especially adaptable for winter motoring.
As easy to put on as your hat.

The Way Muffler Co.

MANUFACTURERS

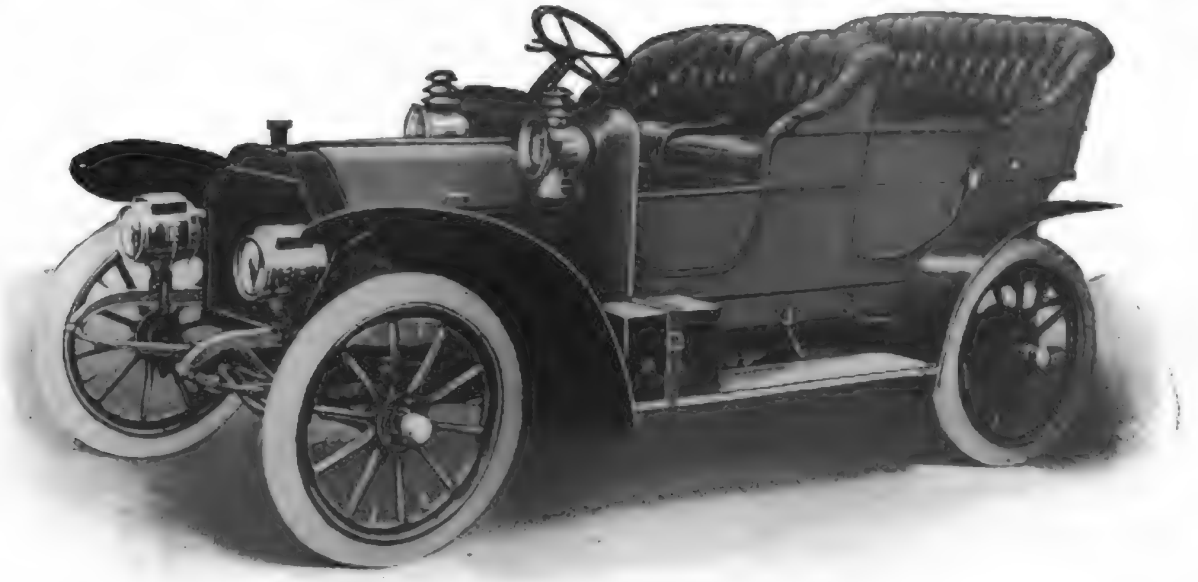
Cor. 23d and Arch Streets, PHILADELPHIA, PA. J. HOWARD WAY, Prop.

Chicago, 923 Machesney Temple — New York, 45 Lexington St.
Pittsburg, 21st and Liberty Sts. — Cincinnati, 21 W. 3rd St.
London, Canada, Hiscox side

Motor Age

Digitized by Google

OLDSMOBILE



We certainly have no monopoly in good motor cars this year. The best American cars are all good, and we only put in a bid for our car at $2250 (Model S, 4-cylinder), because it has an individuality worth knowing before you buy anything else. Have your trial run in it and then you can purchase or not, but you will have learned something about compactness, power and style that may stand you in good stead. If you want a lower priced car, The Two Cycle (Model L) at $1250 is apt to be "it." We don't have to more than refer to The Two Cycle, because every one knows about it. If you want to read up a little, make use of the coupons below.

OLDS MOTOR WORKS, Member A. L. A. M. Lansing, Mich., U. S. A.

WE WILL EXHIBIT AT MADISON SQUARE GARDEN

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS

LANSING, MICH.

dly send me information regarding cars checked.
nterested.

B.... Delivery Cars....
Model S.... Passenger
Model L.... Traffic Cars....

ss

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS

LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. 14

Name

Address

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS

LANSING, MICH.

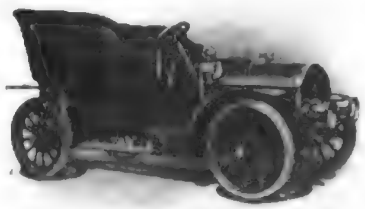
Enclosed find 25 cents, for which have MOTOR TALK, a magazine devoted to automobiling, sent to me for 1 year. 14

Name

Address

Digitized by Google

Waltham Orient



Waltham-Orient Model R, $2,250.
The Keystone of the Air-cooled Arch.

Friction-drive Buckboard Model BB, $400.
The lowest priced Motor Car made in the World.

The Car of To-day Must do More than Look its Price. The high priced, high powered motor car is all right—it has its place and its purchasers, but the **popular demand** is for a car of moderate price, reasonable speed that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of its Price

Five Touring Models for 1906

Model R, a Swell Special 20 h. p. - - - - -	$2,250
Model N, 20 h. p. Tourist - - - - - - -	2,000
Model L, 16 h. p. Tourist - - - - - - - -	1,750
Model M, 16 h. p. Runabout, **Detachable Tonneau,**	1,750
Model K, 16 h. p. Two-passenger Runabout,	1,600

A Greyhound can run a mile as rapidly as a five thousand dollar Racehorse, and he can course through the sand and up the cliffs where the thoroughbred cannot follow; which only goes to prove that price, bulk, weight and power rating do not necessarily mean the first to finish nor the one to get nearest the top of the mountain.

The Buckboard is the Greyhound of Motor Cars. It makes no pretensions to being the thoroughbred horse. It has no five thousand dollar price tag on it, but is simply in a class of its own, equally a pleasure to its owner, for it serves its purpose and serves it well.

WHY?

BECAUSE: It creates interest quicker than any car you can represent. It conflicts with no other sales. It makes Motorists out of Horsemen and Cyclists. It sells to owners of the "thoroughbreds" for daily service to the station, the country club or the seashore. It sells for Rural Mail Routes, Telephone and Telegraph Linesmen, Parcel Delivery, etc. It requires less time and trouble for each sale, and less subsequent expense and repairs. It has an operating cost less than one-third of any other motor car in the world. It will run 35 miles to the gallon of gasoline, and 100 miles to the pint of oil. It has a maximum power ratio of 40 to 1. No other car exceeds 18 to 1. It will climb 40 per cent official grade and run 30 miles or more per hour. If you will write us we will send you forty other reasons.

We are alive for live agents. Write for specifications and agency proposition.

We will exhibit only at the New York, Chicago and Boston Shows.

DISTRIBUTING DEPOTS

NEW YORK—Waltham Mfg. Co., 1615 Broadway.
BOSTON—Waltham-Orient Motor Car Co., Auto Arcade.
PHILADELPHIA—Martin & Hart Motor Co., 215 N. Broad St.
PROVIDENCE—The Shepard Company.
CHICAGO—The Waltham Motor Car Co., 433 Wabash Ave.
LOS ANGELES—Diamond Motor Car Co., 2604 S. Main St.
BALTIMORE—Auto Supply & Storage Co., 1416 Madison Ave.
CINCINNATI—Queen City Auto Co., 538 West McMicken Ave.

WALTHAM MANUFACTURING COMPANY

GENERAL OFFICES AND FACTORY
WALTHAM, MASSACHUSETTS, U. S. A.
Members of Ass'n Licensed Auto. Mfrs.

Digitized by Google

You Must Take a Ride

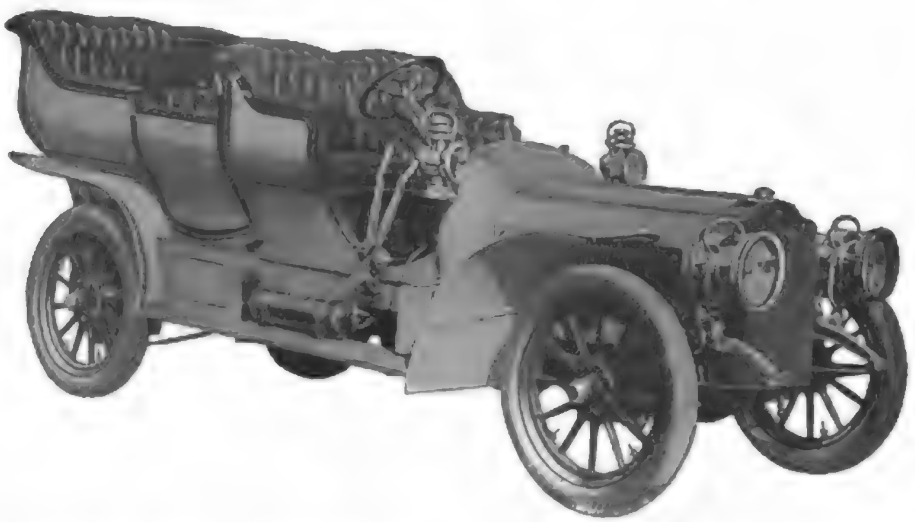
in the

50 HORSE-POWER

THOMAS FLYER.

to fully understand and appreciate its powerful construction, perfect mechanical parts and excellent finish.

Price
$3500
F. O. B.
Buffalo



Members
Association
Licensed
Automobile
Manufacturers

As a result of three years of constant study, ambitious determination and hard work, we have in the new Thomas more fine bearings, more improved devices, proving power, safety, comfort and durability than any automobile made at home or abroad.

"Every Stock Thomas Car guaranteed to show sixty miles an hour before leaving the factory."

All we ask is an opportunity to show you and every man that we can prove the statement—

"The Nearest Approach to Automobile Perfection"

E. R. THOMAS MOTOR CO.

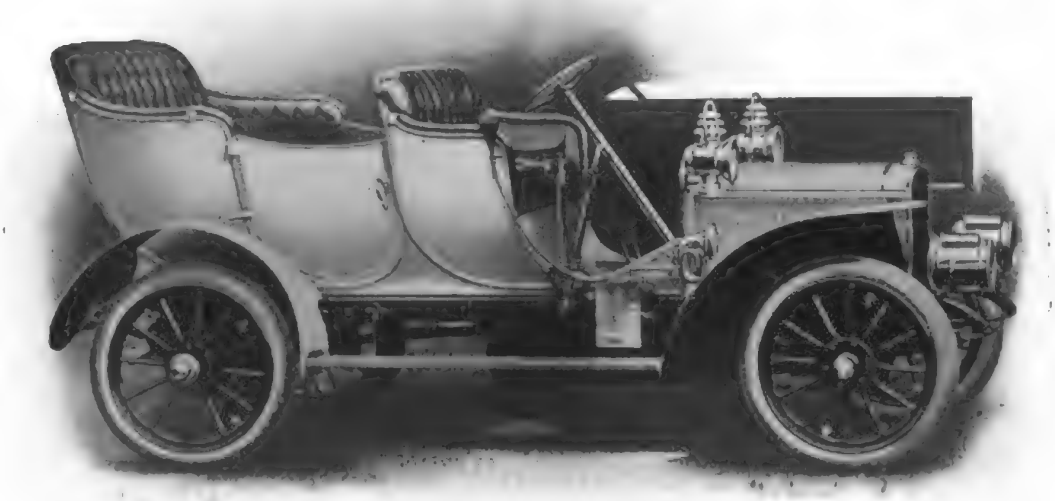
1417 Niagara St., BUFFALO, N. Y.

Largest Manufacturers of 50 Horse-Power Cars in the World

Digitized by Google

THE NEW MODEL F--30-35 H. P.

Cleveland



Is Now Ready for Immediate Delivery. Price $3,500 to $5,000, Depending Upon Body Equipment. Five to Fifty Miles an Hour on the Third Speed.

SPECIFICATIONS:

ENGINE—30-35 H.P., 4-cylinder, water cooled.
IGNITION—Simms-Bosch low tension Magneto make and break spark.
TRANSMISSION—Sliding train, 3 speeds forward and one reverse.
REAR AXLE—Shaft drive, clutch driven hub. Ball bearings.
FRONT AXLE—I-Beam Section. Ball bearings.
FRAME—Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
WHEEL BASE—104 inches.
WHEELS—Imperial whalebone, grade A second growth hickory.
TIRES—34 x 4.
VALVES—Mechanically operated, inlet and exhaust interchangeable.
CARBURETER—Float feed, requiring no adjustment.
BRAKES—Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
BODY—Victoria or double phaeton, tulip side entrance.
EQUIPMENT—Two head lights, 1 generator, 2 side lights, 1 rear light, 1 horn and tools.

CLEVELAND ECONOMY is the result of the perfect harmony of design, power, strength and weight with tested material and expert workmanship, which enter into *Cleveland* construction. The *Cleveland* not only does its work well, but cheaply, so cheaply that repairs are not to be figured. *It has no weak spots*—neither our exacting tests nor hard usage on the road have evidenced them—and we guarantee every car against them.

The new 30-35 *Cleveland* Chassis is made by the Garford Company, the largest manufacturers of fine Automobile parts and Chassis in America, and is in a class by itself.

The Simms-Bosch low tension magneto ignition with automatic make and break spark, with which every important Foreign Car is equipped, is a distinct feature of the 1906 *Cleveland*.

It is original and efficient and does away with every jump spark trouble, no plugs to clean, no wires to short circuit, no batteries to go wrong, no commutator to wear out or adjust, *no* expense.

Catalogue and Full Information on Request

Cleveland Motor Car Company, Dept. 5, Cleveland, Ohio

NEW YORK: E. B. GALLAHER, 228 W. 58th St., General Eastern Distributing Agent. BOSTON: BUTLER MOTOR CAR CO., 908 Boylston St.
SOUTH CALIFORNIA: A. P. WORTHINGTON, Los Angeles.

New York Automobile Show, 69th Regiment Armory, space E-2 **Chicago Show, 1st Regiment Armory, space A-25 and 26**

Digitized by Google

The Ford 4-cylinder Runabout

This car—Model N — is the biggest revelation yet made in automobile construction. A car of this type for less than $500.00 seemed an impossibility, but here it is. 4 cylinders. 15 H. P. Direct drive. Speed 40 miles. 78-inch wheel base. Weight 700 pounds.

Ford Model K

6 cylinders—40 H. P., 4 to 50 miles per hour on high gear. Perfected magneto ignition, mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2000 pounds. Price $2500.

NO FURTHER PARTICULARS WILL BE GIVEN UNTIL THESE CARS ARE SHOWN FOR THE FIRST TIME AT THE AUTOMOBILE CLUB OF AMERICA'S SHOW AT THE 69th REGIMENT ARMORY, NEW YORK, JANUARY 13th to 20th.

Deliveries for Models N and K Will Not Be Made Before March

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

Ford Motor Company, Detroit,

Member American Motor Car Man'f's Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Buttonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City.

Canadian Trade Supplied by Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

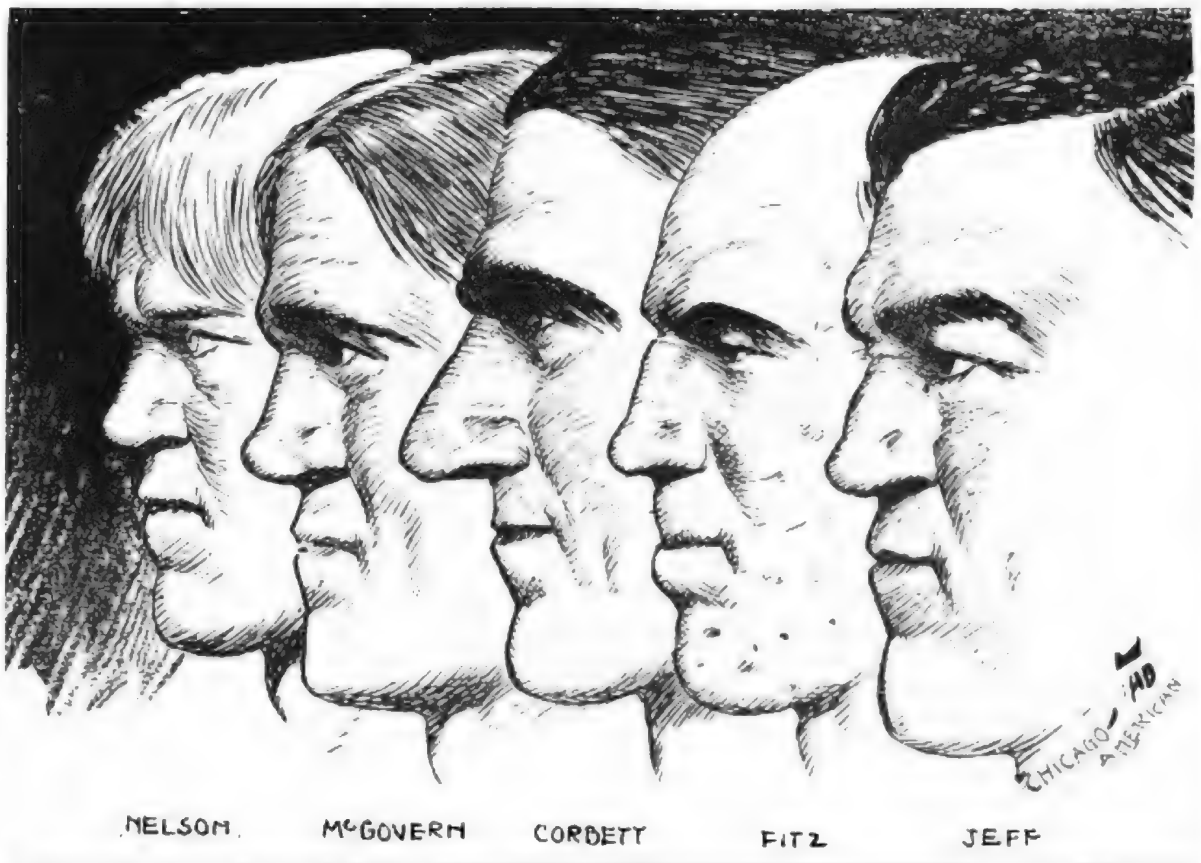
Digitized by Google

ELMORE
ANNOUNCEMENT

[illegible]

[illegible]

[illegible]



Five Striking Models and Each One a Winner

TWO RUNABOUTS, TWO TOURING CARS AND A DELIVERY CAR

MITCHELL 1906

"The Car you ought to have at the price you ought to pay."

Send Ten Cents for **ART CATALOGUE** the handsomest ever published.

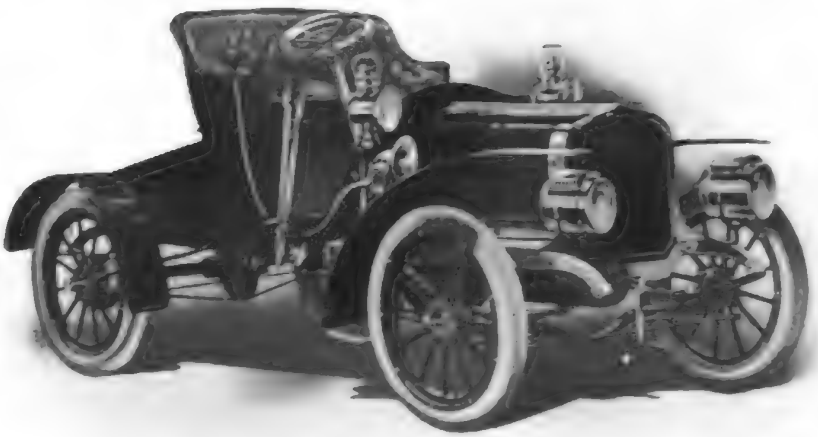
Next week on this page we will illustrate and describe our Model D-4 Touring Car. It will be well worth your time to bear this fact in mind and to look forward to same with all the anticipation at your command. Our word for it—this car is a revelation.

MITCHELL MOTOR CAR COMPANY, Racine, Wis.

Members American Motor Car Manufacturers' Association.

Digitized by Google

Corbin Cars for 1906



Model G. High Powered Runabout, 24 h. p. $1,800.

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section, drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body latest French type for two passengers, divided front seats. Long, graceful tail box. Wheel base 93 inches. Weight 1,650 pounds. Speed 50 miles per hour. Three oil lamps, horn and full complement of tools, constitute the equipment.

Annular Ball Bearings Are Employed Throughout

Certain agency opportunities are still open. Representative dealers are requested to communicate with us to insure early delivery of cars.

Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St , Cincinnati
5905 Centre Ave., East End, Pittsburgh 470 Broad St., Newark

Digitized by Google

1906 MODELS TYPE C

117-INCH WHEEL BASE

WE GATHER from the good opinions expressed by many highly pleased owners of **The Lozier Motor Car** that its "smooth running, ease of control and all-around reliability," covers about everything that is to be desired in a High-grade Motor Car. The item of low maintenance cost and all that it implies, was correctly calculated in its design, and is fully guaranteed in its perfect construction. Among the notably distinctive features that are embodied in

The Lozier Motor Car

may be mentioned—the use of Hess-Bright ball bearings in sliding gear, change speed and differential gears. Weldless nickel-steel forged I-Beam axles of heavy construction. Drop Forged Steering Knuckle. Ball-bearing wheels of large diameter (36 inches). Platform spring suspension. Solid forged motor crank-shaft (arms being webbed out instead of drop-forged)—turned, hardened and ground on its own centers. Transmission and differential shafts and flexible shaft with universal joint of nickel-steel. Babbitted bronze motor bearings. Long wheel-base, 117 inches.

35 HORSEPOWER

36-INCH WHEELS

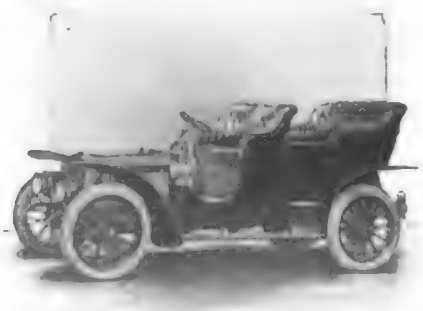
1906 MODEL, TYPE C, 35 HORSEPOWER
Limousines, Landaulets and Touring Cars now delivering. Prices $4,500 to $5,500.

SEATS SEVEN PASSENGERS

PLATFORM SPRING SUSPENSION

The Lozier Motor Company
1 BROADWAY, NEW YORK CITY

[Cars now showing at R. M. Stivers' Carriage Rooms, 19 W. 63d St.
Before January 1st, at our New Building, 55th Street and Broadway]



Digitized by Google

The Greatest Subscription Offer of the Season

$6.50 of the best Automobile Reading Matter for $3.00

Motor Age of Chicago

and

Motor of New York

For Three Dollars

In addition to above Special Offer we will send absolutely

FREE

ONE COPY OF

A work of practical information for the use of Owners, Operators and Automobile Mechanics,

Giving full and concise information on all questions relating to the construction, care and operation of gasoline and electric automobiles, including

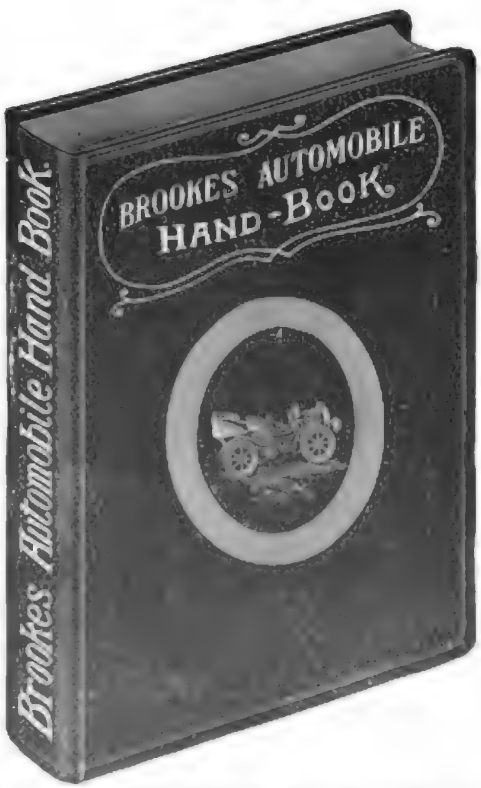
Road troubles
Motor troubles
Carbureter troubles
Ignition troubles
Battery troubles
Clutch troubles
Starting troubles

Pocket size, 4x6½. Over 200 pages, With numerous tables, useful rules and formulas, wiring diagrams and over 100 illustrations, by

L. ELLIOTT BROOKES,

Author of the "Construction of a Gasoline Motor."

Price, One Dollar and Fifty Cents



TOTAL VALUE

Motor Age one year - -	$2.00
Motor one year - - - -	3.00
Brookes Automobile Hand-Book	1.50
	$6.50

From above you will see, by sending us three dollars, that you receive in return the total value of six dollars and fifty cents.

Don't Delay

but send your order with remittance direct to

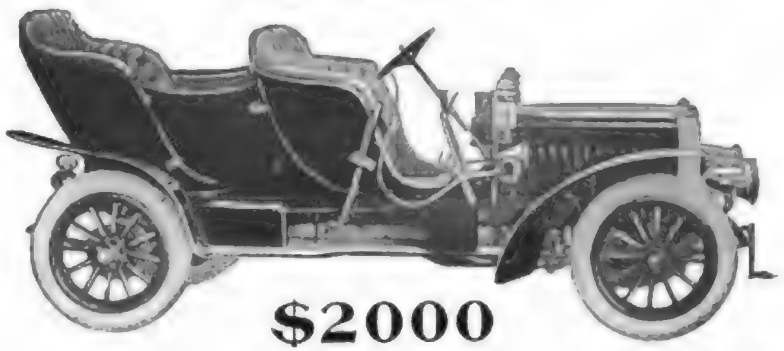
Motor Age

309 Michigan Ave.
Chicago

THIS DOES NOT REFER TO SUBSCRIPTIONS SENT IN PRIOR TO THIS ANNOUNCEMENT

Digitized by Google

The Queen



$2000

One of Our Three New Models

MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS — All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

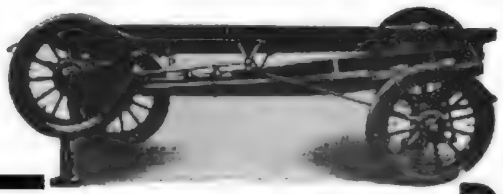
C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

New York Agents, Majestic Auto Co., Cor. 54th & Broadway Chicago Agents, Branstetter Motor Co., 1337 Michigan Ave.

Digitized by Google

THE MARMON

"A Mechanical Masterpiece"



Front wheel and opposite rear wheel each raised over a foot.

Takes the Jolts Out of Rough Roads

Anyone who has ever made a long run in an automobile knows what it means to be shaken, jolted and vibrated almost to the point of exhaustion.

And anyone thus experienced who takes one ride in a Marmon realizes instantly that its positive luxury of motion is not only unequaled, but absolutely unknown in other cars, regardless of price or prestige. The picture shows why.

All roads present this condition in small or large degree—here a bump and there a rut, often forcing one wheel to ride through a depression while a wheel on the opposite side passes over an elevation. Unless the automobile possesses flexibility to meet these varying conditions, it means constant, ruinous strain for the mechanism and constant reaction upon the passengers, varying from vibration to jolting.

Other cars are constructed on much the same rigid principle as a farm wagon. In the farm wagon, comfort is not considered nor is there any expensive mechanism to protect. This the automobile has attempted to remedy with springs and tires of various types. But the unnatural principle is still there. Strain and discomfort are still there.

The Marmon does not depend upon its excellent springs for elasticity. It possesses an exclusive patented feature

Double Three-Point Suspension

Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Power plant and rear axle are practically a unit, always in alignment. Rigid shaft drive without universal couplings. Wheels adjust themselves to the roughest road condition. This elimination of binding and twisting strains means perfect power transmission, greater efficiency with less wear for all parts, tires included.

The Marmon oiling system (fully patented) has no equal. Starting and stopping with the engine a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Simple; unfailing; very economical; has no adjustments.

The Marmon is stylish, strikingly handsome and very quiet. The tonneau is practically dustless without the aid of attachments. Constructed with minute attention to detail. Replete with excellent, instructive and distinctive features.

Write for Booklet No. 1.

Ask us to show you at the Armory Show, New York.

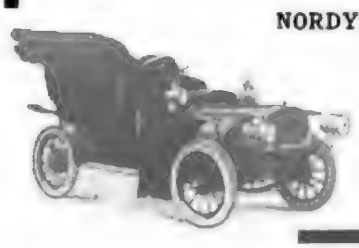
Four Cylinders Air Cooled { Model C, Four Passengers, $2,500 / Model D, Five Passengers, $3,000

NORDYKE & MARMON CO.

Established 1851

Indianapolis, Ind.

Members American Motor Car Manufacturers' Association



It Isn't Always Winter

CRAWFORD 1906 Touring Car $2,000

And when sunny days once more, more fully the bright are with us then you can appreciate

The Joys of Motoring

in a Five-Passenger

CRAWFORD

OUR NEW MODEL IS OUT

Here are the Specifications:

MOTOR: Four-cylinder, upright, water-cooled, 4½ by 4½ individual cylinders. 24-28 Horsepower.

CRANK SHAFT: Four throw, bearing in five bronze bushings aggregating 14½ inches.

CRANK CASE: Removable without disturbing adjustments.

WHEEL BASE: 100 inches; tread 56 inches.

WHEELS: 34-inch, wood, artillery type, on large ball bearings.

TIRES: Optional; regular clincher or mechanically attached.

DRIVE: Double chain on generous-sized sprockets.

TRANSMISSION: Selective sliding gear set, three forward speeds, one lever control, ball bearings.

BEARINGS: Ball bearings throughout.

BRAKES: Two powerful brakes on rear hub, with set lever. Two band brakes operated by foot on cross shafts.

LUBRICATION: Force feed lubricator.

FRAME: Deep section pressed steel sides, with an angle iron sub frame brazed up to carry motor and transmission, which are connected by double universal joint.

CLUTCH: Of inverted type, made dust-proof by leather diaphragm and operated by foot lever.

IGNITION: Jump spark, with four coils on dash.

CONTROL: Throttle and spark.

SPEED: 36 miles, approximate maximum.

WEIGHT: 2100 lbs.

TANK CAPACITY: 14 gallons.

STEERING GEAR: Wheel and pinion.

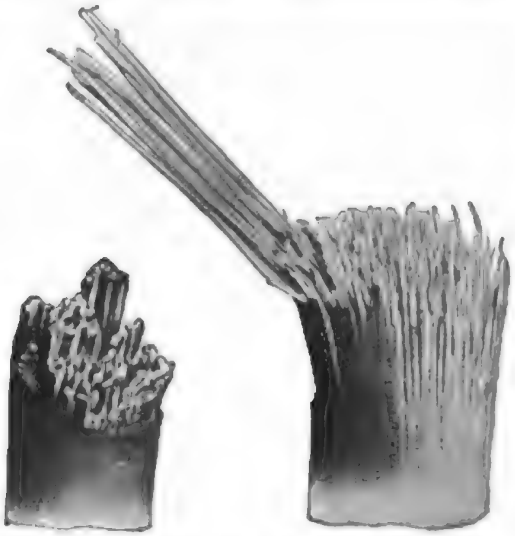
AXLES: Large sized tubing.

SEE US at the A. C. A. SHOW in 69th Reg. Armory NEW YORK

Crawford Automobile Co.

HAGERSTOWN, MD.

Digitized by Google



The "short" fracture shown above, while characteristic of poor oak, happens to show the fracture of poor hickory. The other fracture shows the quality of "Imperial" spoke.

Talks on Wheel Making No. 6

A burst tire is robbed of its danger if the car is equipped with "Imperial" wheels.

¶ The asset value of a car only occasionally obtrudes itself upon the attention of a buyer. And yet it is a matter which should give him deep and constant concern. "For what is worth in anything but so much money as 'twill bring."

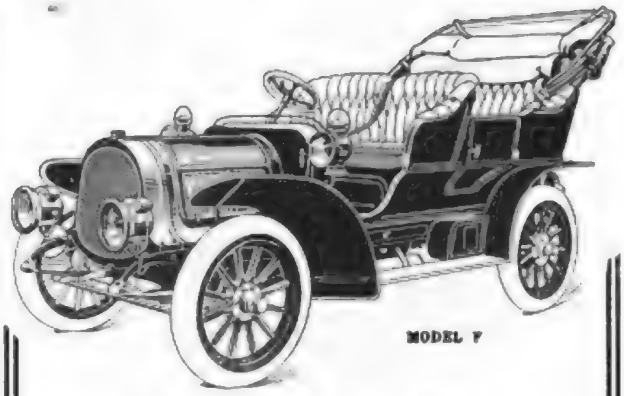
¶ This value cannot be maintained if the components of the car are of indifferent design or material. Cheap wheels impair asset values. "Imperial" wheels help in preserving them.

The excellence of "Imperial" wheels is based upon the perfection and refinement of orthodox methods.

IMPERIAL WHEEL COMPANY

FLINT, MICH.

Selling Agent HAYDEN EAMES Cleveland, Ohio



MODEL F

Pope-Hartford Model F

is the result of our 28 years of experience in making and marketing mechanical vehicles and is the latest product of our famous Hartford Factories. **MOTOR:** Consists of 4-cylinder, vertical, water-cooled engine with cylinders cast in pairs; all gears encased; brake test, 28-30 h. p. **TRANSMISSION:** Sliding gear, three speeds forward and reverse. **CARBURETER:** Specially designed, insuring economy in fuel consumption and maximum power. **CONTROL:** Throttle and ignition levers on single sector that does not revolve with wheel. **DRIVE:** Bevel gear through propeller shaft to the rear axle. **TONNEAU:** Non-removable, dust proof, double side entrance. **DESIGN:** Artistic in conception and execution. While great attention has been given the essentials of construction it will be found that no detail has been overlooked. Everything that will contribute to the user's comfort and convenience has been embodied in this up-to-date car. **Price, $2,500.**

Pope-Hartford Model G

is our 2-cylinder, opposed, 18 h. p. touring car. The engine is under the hood and all parts are accessible for inspection and repair. This is our dependable 2-cylinder machine of last year with such minor changes as has been suggested by a season's use. **Price, $1,600.**

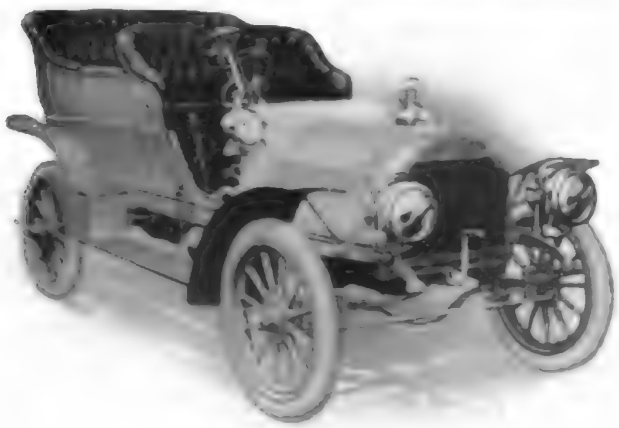
We exhibit in New York at Madison Square Garden only

Pope Manufacturing Company

Hartford, Conn.

Boston, Mass., 223 Columbus Ave
New York City, N. Y., 1733 Broadway
Washington, D. C., 819 14th Street
San Francisco, Cal., 451 Mission Street
A. L. A. M.

Digitized by Google



Again—"As good as it looks"

THE PARLOR CAR OF MOTOR CARS

Stoddard-Dayton

Talk of luxury! The roomiest of seats—splendid cushions that take you into their generous depths and make you forget there was ever an angle to ache mortal spine.

Well, that is the kind of rich comfort you find in the STODDARD-DAYTON Touring Car.
But there's more than fine upholstering to contribute to your ease.

The STODDARD-DAYTON has every **practical** modern device that takes up jar and reduces vibration. The springs are single elliptic—40-inch front, 50-inch rear, made from best crucible analysis steel. There are roller bearings throughout. Mechanical lubrication keeps all working parts swimming.

The STODDARD-DAYTON Model-D—5-passenger Touring Car has a special type of 4½x5 in. 4 cylinder motor; water-cooled; frame of hot-rolled, high carbon, pressed steel, sliding gear transmission, three speeds and reverse—selective type, speeds can be changed instantly without clashing or friction; practically noiseless; entire transmission on roller bearings; mechanical lubrication; 30 to 35 horsepower. Proportion of power to weight, one horsepower to every sixty pounds. $2250. Immediate delivery.

Write for our 1906-book. Interesting to any one who owns a car or intends to own one.

THE DAYTON MOTOR CAR CO. Dayton Ohio

Agencies in the following cities: McDuffee Automobile Co., 1449 Michigan Ave., Chicago; Stoddard-Dayton Agency, 1853 Broadway, New York; Hamilton Automobile Co., 206 North Broad, Philadelphia; Central Automobile Co., 5989 Centre Ave., Pittsburg; J. A. Cramer, 737 Main St., Buffalo; Randliff Motor Car Co., 24 Columbus Ave., Boston; Colonial Automobile Co., 3944 Olive St., St. Louis; Dwight Automobile Co., Omaha; H. A. Moore, 160 Crawford Road, Cleveland; Automobile & Supply Co., 24 Temperance Street, Toronto; Norman W. Church, Hellman Bldg., Los Angeles, Cal.; Haynes Automobile Co., 220 South 6th Street, Minneapolis; C. M. Wood, Denver; Fisher Automobile Co., 10 North Illinois Street, Indianapolis

1906 Announcement 1906

The 1906

Hartford Dunlop

and

Hartford Clincher Tires

will be of entirely new construction. Both types will fit our

Hartford Universal Rim

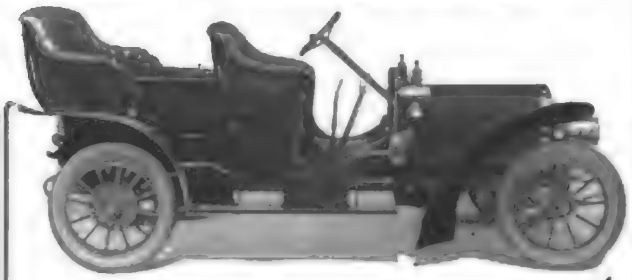
upon which can be placed all makes of Standard Clincher Tires.

The Hartford Rubber Works Company

Hartford ... Conn.

Digitized by Google

THE MARION



The New "Model Five"

This Car has been carefully and intelligently designed for the man who wants to run his own car, wants to run it fast when he feels like it, and doesn't pretend to be or want to be a mechanic or a mender of tires.

A woman can handle the Marion at high speed, steer it safely and stop it quickly—and it is as fast as the speediest. Seats five.

Has 28 actual horsepower and weighs 2,100 lbs. That tells its own story of speed when you note its sane and simple construction. (Take a glance at the chassis.)

The four cylinder motor is exceptionally silent. Air-cooled; two fans, front and rear. Multiple disc clutch and sliding gear transmission. Three speeds forward and reverse. Double Chain Drive delivers this power—all of it—not to the rear axle nor to the hubs, but direct to the spokes themselves. Chains bear no breaking strain, preventing play on the sprockets. Large sprockets. Marion chains run with such silence and precision as to win comment and praise from anyone who is familiar with chain-driven cars of any type.

Two sets of powerful brakes, each operating in the hubs, independent of other mechanism. No "forget how" for an amateur.

Automatic lubrication, efficient, reliable and economical.

Selected materials. All parts bearing strain are of liberal dimensions. Breakage is next to impossible. Few parts and simple parts.

The Marion has the low graceful build of the foreign cars, yet has full elliptic springs and 10-inch road clearance. Minimum of dead weight on rear axle. Tire trouble practically eliminated.

Ask to be shown and we'll send our nearest agent with a Car. Seeing and riding will convince.

Four Cylinders Air Cooled
- Model Five—28 H. P. Touring Car, $2,500
- Model Two—16 H. P. Touring Car, $1,500
- Model Four—16 H. P. Physicians' Runabout, $1,250

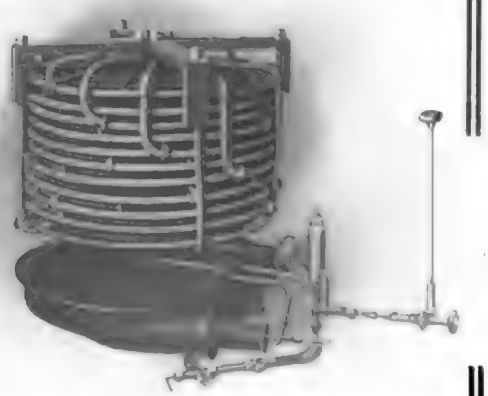
Look us up at the New York and Chicago Shows.

MARION MOTOR CAR COMPANY
INDIANAPOLIS INDIANA

A few good agency propositions will be closed soon.
Get in early.

The Incomparable WHITE

The Car for Service



WHITE GENERATOR

Above is illustrated the generator of the White steam car, together with burner, vaporizer, pilot-light and gasolene connections. A glance is sufficient to show that the White generator is totally unlike any other boiler ever designed. We might point out how wide this difference is by calling attention to the fact that in the White generator the water is at the top and the steam at the bottom. In every other type of steam-making apparatus, water is at the bottom and steam at the top.

If the coils of the White generator should be unwound and straightened out the generator would be seen to consist of a single long piece of steel piping. Could anything simpler than this be conceived? The capacity of the tubes is comparatively small; i. e., the amount of water and steam contained therein at any one time is small. The tubes will safely withstand a pressure of many times that which it is possible for the steam to attain. Could any safer arrangement be imagined?

As regards the superior reliability of the White system, that is a matter which has been amply demonstrated by the continuous victories and notable achievements of six successive models of "The Car for Service."

WHITE SEWING MACHINE COMPANY
Cleveland, O.

Digitized by Google

CHAS. M. SCHWAB

[illegible] the New York *World* in [illegible] manufactures the best [illegible] quality while the American best [illegible] quantity. The supreme aim of the German manufacturer is to produce the very BEST goods in the world and then produce something still better.

Continental Tires are German Tires

They are made in our great factory at Hanover. They are made to be BEST. The finer mechanical skill—the best rubber—the care in selecting that can make the perfection certainty are produced in CONTINENTALS. We have always aimed at quality first and quantity afterwards and the fact that in one month a hundred world leaders began using CONTINENTALS is indisputable proof that our desire to market the BEST tire has been appreciated by every knowing owner of automobiles.

Are YOU using "CONTINENTALS?"

The Continental Caoutchouc Co.

EMIL GROSSMAN, Gen. Mgr.

HANOVER, GERMANY

43 Warren St., New York

[illegible]

— The —

Gearless Transmission

PATENTED

Direct Drive on High Gear

No moving parts but the shaft.

UNLIMITED RANGE OF SPEEDS FORWARD and REVERSE controlled by ONE LEVER.

ROLLER BEARINGS THROUGHOUT. STEEL FRAME entirely removes the annoyance of "thrashing" gears. No clash that can wear. No gears to grind and strip.

Inexpensive and easiest to operate. Thoroughly tested. Write for catalogue.

GEARLESS TRANSMISSION CO., Glens Falls, N. Y.

Armory Show, New York, Room G, Gallery.

Digitized by Google

Haynes...

Exclusive Features that Appeal to Discriminating Buyers.

Model "R." Four-Cylinder Touring Car.

Roller bearing vertical engines. Cylinders 5⅛"x6"; 50 H. P. Cast separately. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carbureter, which assures perfect mixture in all temperatures and under all climatic conditions. Master Clutch that has no leather surfaces to wear. Takes hold easily and gradually without jerking. Shaft drive. Exclusive universal joints that do away with wear on pins, run in housing packed with grease. One piece nickel steel rear axle with beveled sprocket gear, driven by roller pinion; thrust eliminated, friction reduced, noiseless; all in a bath of oil. Roller bearings throughout. 108-inch wheel base. 50-inch tonneau with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight 2,750 pounds. Price $3,500, F. O. B. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906—HAYNES—roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10% loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of preëminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears, the transmission device never allows the momentum of the fast-moving car to be thrown against the power of the engine with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft-driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Grey curled hair and hand-buffed leather upholstering. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are some reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue, sent prepaid upon request. For prompt attention address Desk 24.

"The Car that the Repair Man Seldom Sees."

The Haynes Automobile Co., KOKOMO INDIANA

CHICAGO: 1421 Michigan Ave. Members A. L. A. M. NEW YORK: 1715 Broadway

"SOOT-PROOF" PLUG

It was real merit that made the "Soot-Proof" Spark Plugs win the McMurtry Medal in the Six Day National Economy Contest.

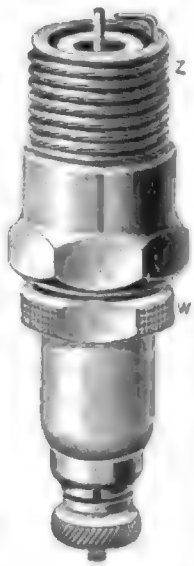
Ninety per cent of all contests won in America were won by cars using "Soot-Proof" Plugs

Specify them when ordering cars. It will save you trouble. Imitations? Sure, but that's flattery.

Indestructible $2.00 Regular $1.50

GUARANTEED

YOUR JOBBER HAS THEM



C. A. MEZGER, Inc., 203 W. 80th St., New York

NATIONAL SALES CORPORATION

FACTORY SALES MANAGERS 256 Broadway, New York

Digitized by Google

IT'S NOT ENOUGH

TO HAVE A SHORT-FOCUS REFLECTOR

YOU MUST HAVE A REFLECTOR THAT REFLECTS

We learned that almost before automobiles were heard of. We were making parabola-lens searchlights then ourselves, and we thought they were pretty good till we compared them with a lens mirror searchlight, and found that the plated reflector was absorbing most of the rays it was supposed to project.

We "scrapped" part of our machinery, and began making the searchlights that, from that day to this, have been the world's standard for efficiency.

If you don't drive at night it matters little how you dress the front of your car. If you do drive at night **your lamps are your life insurance.** If they don't light the road, they are dear at any price.

Try the best reflector lamp you ever saw, side by side, with a Rushmore of the same price. And remember that silver tarnishes, but glass doesn't.

RUSHMORE DYNAMO WORKS, Plainfield, N. J.

PENNSYLVANIA CLINCHER

"No car is faster than its tires."

"Tire troubles place a fast car in a class with the farm wagon."

PENNSYLVANIA RUBBER CO.

JEANNETTE, PA.

Digitized by Google

You Don't Have to Monkey

WITH THE

RUSHMORE GENERATOR

It's an automatic generator for automobiles, that works with the regularity and smoothness of the best house gas plant.

Wholly unlike any other, and the only portable generator whose mode of action will bear scientific discussion.

No wicks—no hand regulation—no overheating—no tar instead of gas—no digging with a putty knife—no wasted carbide when not generating.

Lighter, safer and cheaper than pressure storage.

Let us tell you more about it.

RUSHMORE DYNAMO WORKS, Plainfield, N.J.

FISK TIRES

the most practical tire equipment of any automobile—are savers of time, trouble and money.

¶ They have all the good points of other style tires, with better construction, materials, design and wearing qualities; and, besides, important additional features pertaining to safety.

¶ Every detail of construction is in the hands of the most skilled tire workers, and we invite and urge you to compare their quality with any other tire on the market.

The Fisk Rubber Co., Chicopee Falls, Mass.

RANCHES

New York, 754 Seventh Ave.
Boston, 226 Columbus Ave.
Springfield, 40 Bridge St.
Philadelphia, 138 N. Broad St.
Minneapolis, 704 Hennepin Ave.

Atlanta, 103 N. Pryor St.
Syracuse, 423 S. Clinton St.
Buffalo, 893 Main St.
Cleveland, 318 Euclid Ave.
Los Angeles, 1054 Main St.

Detroit, 254 Jefferson Ave.
Chicago, 1251 Michigan Ave.
Kansas City, 1330 Main St.
St. Louis, 3908 Olive St.
San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

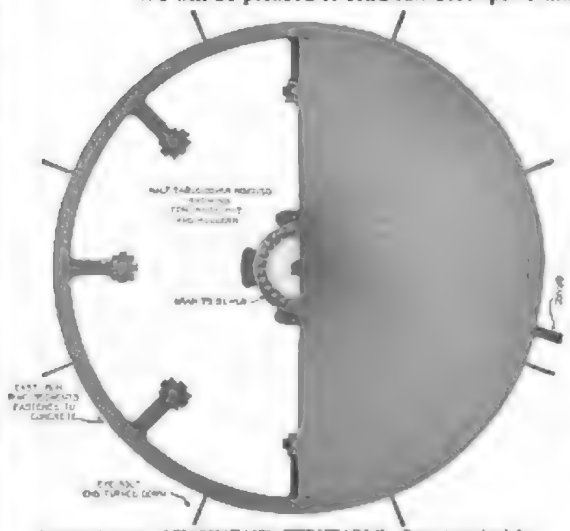
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

It moves easily, is practically indestructible and is absolutely fire-proof.

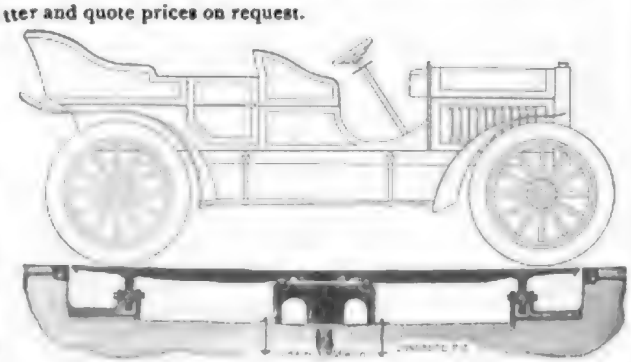
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the wash stand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



LINK-BELT Machinery Co.

CHICAGO

MICHELIN

Go Faster—Last Longer

Why? MORE PURE RUBBER
EXCLUSIVE FABRIC
SUPERIOR VULCANIZATION
UNEQUALED WORKMANSHIP

KNOWN THE WORLD OVER
THAT
10,000 MILE
TIRE

MICHELIN TIRE AMERICAN AGENCY, Inc.

Telephones: 760-761 Madison Sq. 6 WEST 29TH STREET, NEW YORK E. D. WINANS, Gen'l Mgr.

Branches in all large cities

Digitized by Google

Pantasote
LEATHER

An Ideal Material for Automobiles and Motor Boats

For Seatings — Pantasote Leather wears better than the natural hide, it contains no oils to dry out, and is impervious to weather; will not crack, peel or chip.

For Canopy and Cape Tops — Pantasote Top Materials give a handsome finish to the car, are more durable than the real hide, absolutely water, stain and grease-proof, and vastly superior to the various rubber and inferior imitations of leather, as Pantasote always remains soft and pliable, and is not affected by climatic conditions.

Send for samples of the new and complete 1906 line

The Pantasote Company

11 Broadway
NEW YORK

926 Monadnock Bldg.
CHICAGO

WORTHINGTON AUTOMOBILE COMPANY

547 Fifth Avenue New York City

24 h. p. Berg Touring Car

IMMEDIATE DELIVERY MEMBERS A. L. A

Digitized by Google

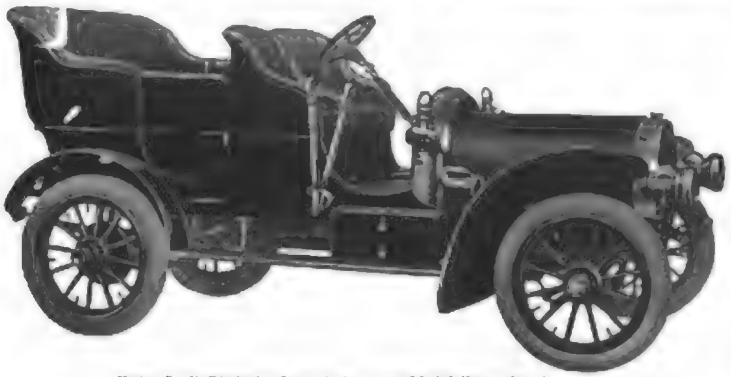
SIX MILES ON A STANDARD RIM

Nathan

National

Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made **1,094 3-16 Miles in 24 Hours,** breaking the former World's Record by 78 9-16 miles, and **1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second,** breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**



Model D—NATIONAL—One of the same kind fully equipped.

"Watch for the Round Radiator"

Write us for anything else you may want to know.

National Motor Vehicle Co.

1006 E. 22d St.

INDIANAPOLIS, IND.

Member American Motor Car Mfrs. Association, Chicago

DISTRIBUTORS:

Linscott Motor Co., 163 Columbus Ave., Boston
Homan & Schultz Co., 35th St. & Broadway, New York
Ralph Temple Auto Co., 310 Michigan Ave., Chicago
Tioga Auto Co., Broad & Tioga Sts., Philadelphia
Liberty Auto Co., 138 Beatty St., Pittsburg
Nat'l Motor Car Agency, 705 S. Main St., Los Angeles

Compound Doctor's Stanhope

A Doctor Can't Afford To Take Any Chances

Free from NOISE and VIBRATION

Price, $1,400.00

12-15 H. P.

The use of any of our models ensures Endurance and Reliability.

Only the very best material obtainable, assembled by the most expert mechanics, enters into its construction.

Chassis is the same as used in our Model Four, Light Touring Car, which carried five people in the New York Motor Club's recent Economy Test and defeated every touring car entered.

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

How to Know When Your Tire Gets Flat

HOW much money would it save you in a season if a bell rang as soon as one of your tires began to get flat?

Supposing this were possible.

For you know the *ordinary* tire begins to rim-cut as soon as the air begins to leak out.

And generally you don't know a thing about it until you are riding on the rim. Then it's too late, for the damage is done.

Nothing remains for you to do but say things unfit for publication and make the best of it. Isn't that gospel truth?

* * * *

Now there's a sure way to know when your Tire is leaking—without watching it—without worrying about it—without getting out of the car.

If you have the Goodyear Universal Rim on your car, it will sound an alarm before the air in your tire is exhausted to a rim-cutting point. And this is the way it does it:

The flanges of the Goodyear Universal Rim (which hold the tire in place) are circles of steel which slide on and off the base of the rim, as a ring slides on and off your finger. When both flanges are in place, a "key" ring or locking ring, keeps the outer flange from being forced off by pressure of the tire. When used for Goodyear Universal (the tire that wipes out 90 per cent of all tire troubles) the Universal Rim would be assembled like Fig. 1.

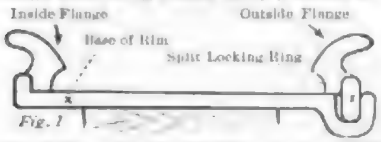


Fig. 1

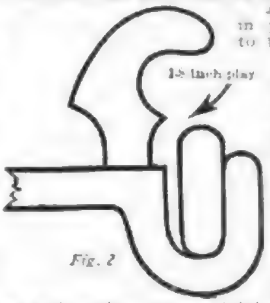


Fig. 2

As soon as the air in your tire leaks out to the danger point, it lets the outer flange slide inward slightly, except where the valve stem comes. This leaves about ⅛ inch play between the top of the locking ring and the bottom of the flange (see Fig. 2,) and just as soon as the air leaks out to the danger point, this binding ring begins to tinkle like a bell, saying to you plainly and unmistakably: "Shut Down! Stop!! Your Tire is beginning to rim-cut!!!" If you *heed* this call, you have saved the cost of a new tire.

* * * *

This is only *one* of the reasons why the Goodyear Universal Rim will preserve *any* tire to a hale old age.

There are others of even greater importance.

If you get a puncture, you can remove your tire to make the repair in 30 seconds—and it requires no tools but the hands. It's as easy to remove and put back a tire on a Goodyear Universal Rim as it is to put on and take off your cuffs, and it takes but little more time.

This is all there is to removing a tire from the Universal Rim. See how *easy* it is.

Unscrew the Thumb Nut which holds the valve stem tight against the rim. Push the valve Stem up into the Tire (this lifts the steel plate which holds the flanges in position.)

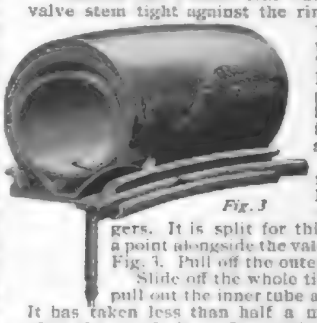


Fig. 3

Spread and remove the locking ring with your fingers. It is split for this purpose at a point alongside the valve stem. See Fig. 3. Pull off the outer flange ring.

Slide off the whole tire, or simply pull out the inner tube as you prefer. It has taken less than half a minute. And after the repair is made, another 30 seconds and you are ready to pump up.

* * * *

The Goodyear Universal Rim will take any Goodyear Tire (Detachable or Clincher, or any *standard clincher tire on the market*. If your car has Goodyear Universal Rims, you can have a tire of a different make on each wheel if you wish. And it will take less than a minute per wheel to change from one make of tire to another, *without the use of a single tool.*

* * * *

Get our "Good News Book" and see the many other convenient, money saving and time saving features of the Goodyear Universal Rim when used in connection with the Goodyear Detachable Auto Tire. This book will be found intensely interesting to the Manufacturer, Dealer or Rider, because it shows a sure way of relief from all tire troubles.

THE GOODYEAR TIRE & RUBBER CO., Wallace Street, AKRON, O.

Branches in the following cities: Boston, 6 Merrimac St.; New York, Cor. 64th St. and Broadway; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Morgan St.; Philadelphia, 1221 Spring St.; San Francisco, Geo. P. Moore & Co., 506 Golden Gate Ave.; Buffalo, 710 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

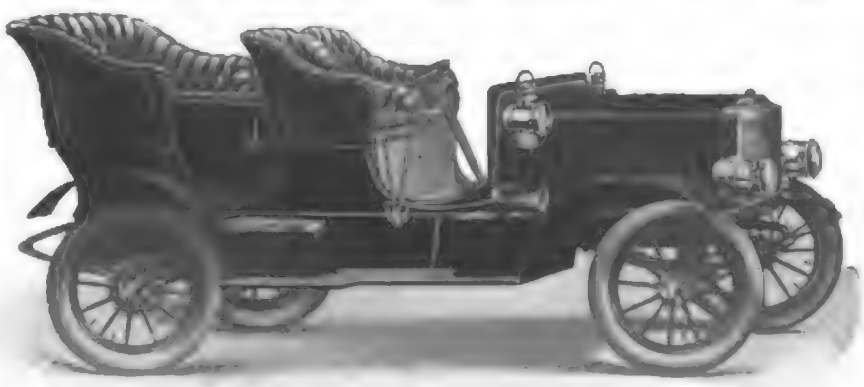
BAILEY TREAD furnished on Goodyear Tires (all sizes) when ordered

1906 Models Ready for Delivery

THE LAMBERT

The Famous Friction Drive Car

It will pay you to investigate the Lambert for two reasons:
1st. Simplicity of Construction 2d. Cost of maintenance



NO COMPLICATED PARTS

We are booking orders on the following models:

Model 8. 34 H. P. Heavy Touring Car	$3,000
Model 7. 34 H. P. Touring Car	$2,000
Model 6. 18 H. P. Touring Car	$1,500
Model 5. 16 H. P. Touring Car	$1,200
Model 4. 16 H. P. Light Touring Car	$1,050
Model A. 16 H. P. Runabout	$900

Model 7. 34 H. P. Price, $2,000

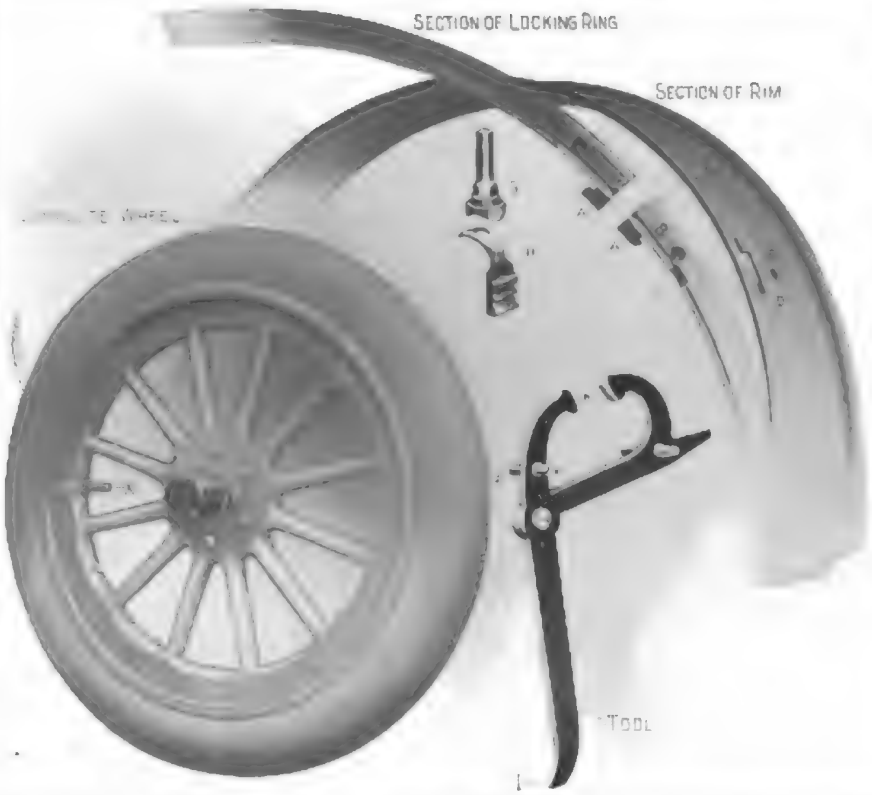
A Gearless Transmission

This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau.
Write for descriptive matter on the above models.

THE BUCKEYE MANUFACTURING CO., Anderson, Indiana

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google



Your Tire Off and On in Less than a Minute

Tells exactly what is accomplished by means of the

Goodrich Quick Detachable Construction

And a visit to our Exhibit at the New York Automobile Show, Madison Square Garden, will afford you the opportunity to see our claims proved.

Perhaps you may wish to make dead sure and detach and attach the tire yourself. It is a pleasant little pastime with all the old time hard work features cut out. You will enjoy the experience and be impressed with the fact that the Goodrich Quick Detachable Tire and Rim is a great achievement in automobile tire building.

Space in Central Boxes directly over Madison Square entrance.

The B. F. Goodrich Company, Akron, O.

New York, 66-68 Reade St. and 1625 Broadway
Buffalo, 731 Main Street
San Francisco, 392 Mission Street
Boston, 161 Columbus Avenue
Philadelphia, 909 Arch Street
Cleveland, 416 Erie Street
Chicago, 141 Lake Street
Detroit, 80 East Congress Street
Denver, 1444 Curtis Street
London, E. C., 7 Snow Hill

KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 31,000 KINGSTON CARBURETORS IN USE

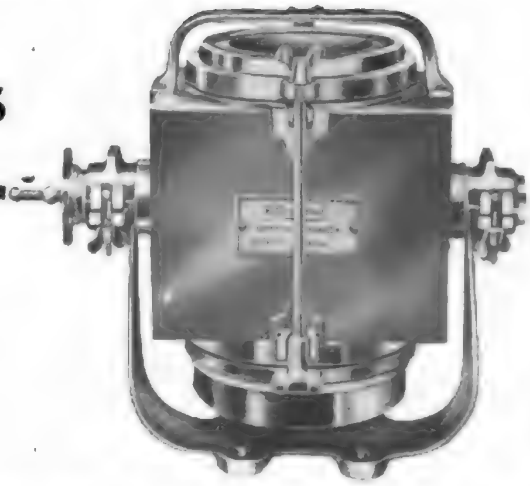
KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

Make your own gas



The Neverout
TRADE MARK
Patent Invertible

Safety Gas Producer

is the only safe method for lighting motor-cars and boats.

Makes gas only as needed—at a cost of less than ½ cent per hour. No gas confined under pressure, no danger of explosion. Instantly lighted and extinguished.

No trouble, no dirt, no odor

A truly great invention that is as wonderful in its way as is

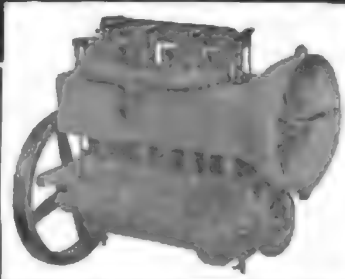
Neverout Mirror Lens Searchlight

the most powerful of all light projectors. Money back if not satisfactory. *Write for free booklet.*

Largest Searchlight Factory in the World

ROSE MANUFACTURING CO., 912 Arch Street, Philadelphia

WE HAVE IT



Absolutely Tested by all kinds of Herculean Work

Positively Proved by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on motor end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

ICE COOLED VERTICAL

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3½x4 inches
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches
Total bearing surface on Crank Shaft, 10¼ inches
Bearing on Connecting Rods, 2x1¼ inches.
Bearing on Wrist Pin, 1¾x1¼ inches
Connecting Rods of drop forgings with phosphor bronze Crank Shaft
Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 19½ inches
Center of Crank Shaft to bottom of Motor, 4¾ inches.
Center of Crank Shaft to top of Motor, 18 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant level automatic lubricator

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES FOR LIGHT POWERED CARS REBUILT
ADDRESS JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

MOLINE for 1906

Model "A" 30-36 H. P. $2500.00
Model "C" 18-20 H. P. $1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. $1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way.

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.

Advance circular ready for distribution.

Moline Automobile Co.

EAST MOLINE, ILLINOIS, U. S. A.

Digitized by Google

THE BAKER ELECTRIC STANHOPE

is, of all motor vehicles, the one most desirable, from every standpoint, for family and professional use. For family use, it is especially adapted by its extreme simplicity and ease of operation. Any man, woman or child can drive it after a few hours' practice. There is no troublesome cranking of a heavy motor, made doubly difficult in cold weather. No loading with gasoline, oil or water, no trouble with spark plugs, and on account of their light weight, the danger of tire troubles, skidding etc., is reduced to the minimum.

THE BAKER STANHOPE is always ready for use at a moment's notice. The user merely turns on an electric switch, operates the control lever, and away he goes with as great speed as may be legally used.

BAKER STANHOPES, being noiseless, free from grease and odor, and always immaculately clean, are ideal vehicles for the use of ladies when shopping, calling, or driving for pleasure, and they are so simple to operate that a chauffeur is an incumbrance. In addition, these

ARISTOCRATS OF MOTORDOM

are so superbly finished in every minute detail as to make them eminently distinguished in appearance, their elegant refinement instantly appealing to the most casual observer. These excellent features have enabled us to sell every machine we have made, early in the season, and obliged us to refuse orders.

Our line of vehicles comprises Imperials, Stanhopes, Surreys, Depot Carriages and Broughams (interior and exterior driven), all superb vehicles, elegant and refined in every detail, and with that high degree of mechanical excellence which has placed and keeps them in the front rank of the automobile procession.

We desire Agents in a few important Cities not yet covered

THE BAKER MOTOR VEHICLE CO., 24 Jessie St., Cleveland, O.

THE Maxwell

PERFECTLY SIMPLE
SIMPLY
PERFECT

16 H. P. Touring Car
$1,450

8 H. P. Tourabout
$780

THE CAR that made a perfect score in the Glidden Tour—1,004 miles without a single adjustment. No car at less than twice the price made **AS GOOD** a record. No car **AT ANY PRICE** did better.

THE CAR that won a victory over all cars costing from one to two thousand dollars in the "Climb to the Clouds" at Mt. Washington. Unlike some contestants, we did not have to send three cars to get one up, but sent the **SAME** car up **THREE TIMES.**

THE CAR whose regular stock 8 H. P. Runabout type won the race at Long Branch August 19, making four miles in 5 min. 33 sec., and defeating cars listed at several times the price.

The automobile that has done these things **MUST** be worthy of your consideration. Look at as many cars as you please, but don't buy before seeing the Maxwell.

The agency field is filling fast. If you contemplate applying for a Maxwell agency, better do it now.

MAXWELL-BRISCOE MOTOR CO.

TARRYTOWN, N. Y.

Central Western Representative: A. F. CHASE.

Members of American Motor Car Manufacturers' Association. Agents in Principal Cities.

New York Agents: MAXWELL-BRISCO, INC.

Foreign Representatives, (except Canada and Mexico) RICHARD IRVIN & CO., 25 Broad St., New York City.

Digitized by Google

The output of COMPLETE FRONT and REAR AUTOMOBILE AXLES of this plant exceeds the capacity of all competition combined.

THE AMERICAN BALL BEARING CO.
L. S. & M. S. Railway and Edgewater Park
CLEVELAND, OHIO, U. S. A.

We Have the Only Generator

on the market that is made in one piece — and the only safe generator is a one-piece generator.

The man who uses one of the cheap, tin-can generators, with which the market is flooded, is fooling with something which is loaded, and may hurt him.

We believe that you and your car are worth far more than the trifling amount you may save by buying "the other kind," and we want to tell you just why ours is best—may we send you the catalog?

MILLER MFG. CO.
Peekskill, N. Y.

8,000 MILES

Perfect Satisfaction, Never Breaking

HOTEL TOURAINE
BOSTON

July 3d, 1905.

BRAMPTON BROS., Ltd.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

1906 CARS

Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars.

Catalogue mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

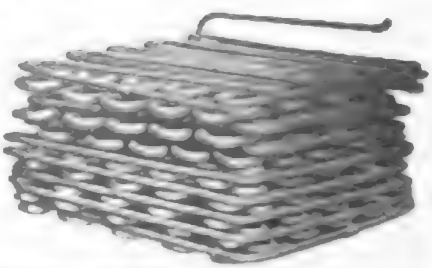
BRANCHES
Broadway and 38th St., New York. Philadelphia—318-320 N. Broad St.
Boston, Mass.—202-204 Columbus Av. Cleveland, O.—408 Erie St.

STEAM CAR SPECIALTIES

STRICTLY UP-TO-DATE

The only Flash Boiler with a reserve capacity. Condensers that condense. Burners that burn: either kerosene or gasoline. Single Acting Steam Engines, designed especially for superheated steam.

Everything for building an up-to-date steam car, or for remodling your old one. Flash Boilers; any size.



E. C. Walker Co.
1913-1923 LOGAN ST., LOUISVILLE, KY.

Digitized by Google

AN IDEAL XMAS PRESENT

THE AUTO-METER

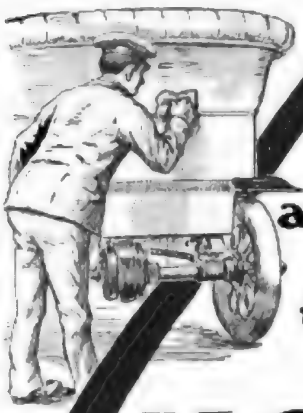
A most acceptable gift to any friend who owns a car. Its presence on his dashboard will be a constant and pleasant reminder of the donor.

It Tells How Fast and How Far

a car travels, with absolute accuracy. We are issuing a **handsome engraved Christmas certificate** which entitles the bearer to an Auto-meter. *Write for particulars.*

WARNER INSTRUMENT CO., **55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 149 Federal St., Boston Mass. Warner Instrument Co., 1691 Broadway, New York City, N. Y.
Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.
Northern California, G. P. Moore & Co., San Francisco, Cal. Southern California, Heineman & Pearson, Los Angeles, Cal.



Keep it new and bright with the new cleanser MOBO

Elbow grease and common soap will not preserve the polish of an automobile. It may remove the dirt—but the shine goes too. Mobo is unlike any other substance for cleaning automobiles, preserving and restoring the original lustre; removing grease and travel stains. Mobo is a preserver—it prevents blistering and cracking of the painted surface. Absolutely harmless to the hands Can be used on the leather work of the automobile (also harness) as well as the wood and metal work.

Put up in 2 lb. and 8 lb. cans; also in tubs, half barrels and barrels. If your dealer hasn't it—tell us, we will see that you do get it.

JOHN T. STANLEY
638 W. 30th St. NEW YORK

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 20 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

HAVE YOU BEEN THE NEW **KOKOMO** MECHANICALLY-ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,
KOKOMO, IND.

Digitized by Google

ADAMS-FARWELL

THE ALL SEASON CAR

3 Cylinder Motor 20-25 Horsepower
5 Cylinder Motor 40-45 Horsepower

Operated from rear seat or from folding front seat.
All windows may be lowered, making an open car.

Five Other Models - From $2,000 to $4,000

NO WATER NO RADIATOR NO FLYWHEEL NO FAN
NO MUFFLER AUTOMATICALLY GOVERNED

Chicago Salesroom: 1836 Michigan Ave.

THE ADAMS COMPANY DUBUQUE, IOWA, U. S. A.

GEECEE
STORAGE BATTERY
UNEQUALED FOR
AUTOMOBILE AND MOTOR BOAT IGNITION AND ILLUMINATION

Higher in capacity and voltage than any wet Battery now on the market.
ACID (ELECTROLYTE) IN SUSPENDED FORM, made dry by a secret process, can't spill or leak.
PERFECTLY SAFE IN ANY POSITION, no danger of acid-eaten clothes, connections, etc.
As easily recharged as a wet battery.
A layman can do it as well as an electrician when he uses the "Geecee" charging outfit.
Full Directions with each Battery and Outfit.
By buying the "Geecee" you buy miles, and you will know just how far you can go.
The same battery that operates your ignition outfit, will also furnish the required current to operate your limousine light or a searchlight on your motor boat.

ROYAL BATTERY CO., Mfrs., New York
National Sales Corporation
Factory Sales Managers 256 Broadway, New York

HOTEL NORMANDIE

NEW YORK CITY Elmer E. Almy, Prop.

The noonday rendezvous of the Automobile trade

European Plan.

Very Center of Amusement and Business District.

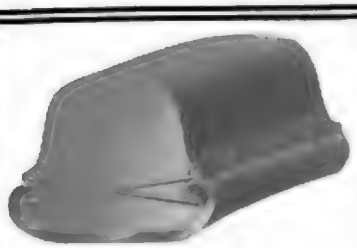
Broadway and 38th Street

Long distance telephone in all rooms. Single rooms with bath and in suites.

Restaurant noted for the excellence of its cuisine, its efficient service and moderate prices.

$1.50 PER DAY AND UPWARDS

OSBURN HOUSE, Rochester, N. Y.
Elmer E. Almy & Co., Propr. : : : American Plan.

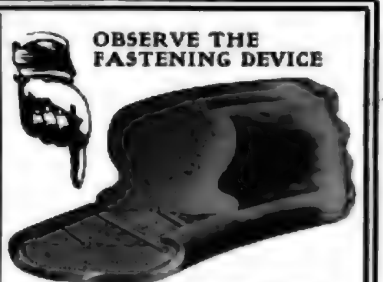

Tire Fastener for Heavy Work

Save Time, Money and Trouble and GET MOST WORK out of

MOTZ CLINCHER TIRES

Solid Rubber or Cushion Types
and made to fit any standard clincher rim in which pneumatic tires are used

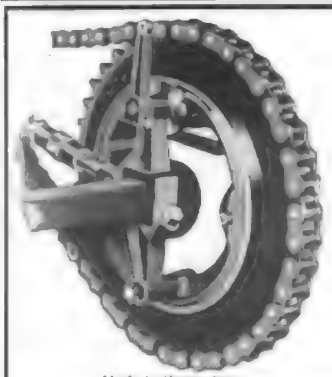
OBSERVE THE FASTENING DEVICE


Tire Fastener for Ordinary Work

RESILIENT AND 'THER E WITH THE WEAR"

The Motz Clincher Tire & Rubber Co.
AKRON, OHIO, U. S. A.

Digitized by Google



Made in three sizes

GARFORD PARTS

A few Garford parts in a high grade car enhance its value. Liberal use of them maintain it. Just now we have none for sale. High grade car makers snapped up all we can make this season just as soon as they were offered—a plain tribute to the excellency of their design and material. Our productive capacity for 1907 will be so enlarged as to avoid the disappointment of fruitless inquiry.

MOTOR WAGON PARTS

We can, however, promptly execute orders for steering gears, brakes, sprockets, motor hangers and other parts for motor wagons. They are suitable for all classes of commercial power vehicles, from the lightest to the heaviest. They are not "freak" components of a wonder working vehicle. They enjoy the rare distinction of having been thoroughly tested for some years past in the most varied and severe kinds of commercial service. Circulars 2, 3, 5, 10 and 11 give information concerning them.

THE GARFORD COMPANY, Elyria, O.

Sales Manager: HAYDEN EAMES, Cleveland, O.

Pinion and Section Type also supplied.

BERKSHIRE AUTOMOBILES

High Class Touring Cars

Made and Tested in the Berkshire Hills

1906 Models Ready December 15th.

16 H. P. $2,000. 25 H. P. $2,500. 40 H. P. $4,500.

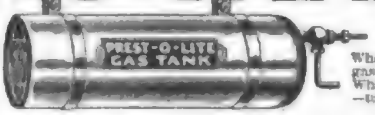
Douglas Andrews Company,

SELLING AGENTS.

1623 BROADWAY, NEW YORK.

EQUIP YOUR CAR WITH THE PREST-O-LITE GAS TANK

No Waste. No Odor. Needs no Attention. Tips Never Clog.



SIMPLE ENOUGH

When you want gas, turn it on. When you don't, turn it off.

Extreme Cold Cannot Affect It

ALWAYS READY FOR USE

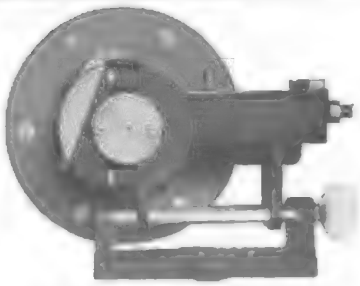
An Absolute Necessity where Good Service and Convenience are Considered worth while

OVER 5,000 SOLD THIS SEASON Write for Booklet, List of Agents, Etc.

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.

AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL



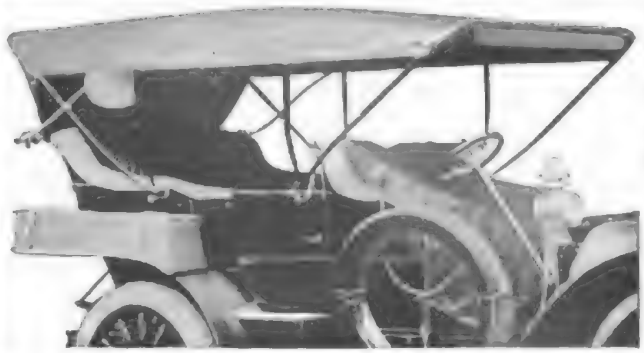
The P. T. C. Power Tire Pump

It is designed to inflate pneumatic tires by POWER driven by friction from fly wheel. Always in place. Started by turning a screw. Write for circular.

The Pacific Tucking & Manufacturing Co.

471-3 18th Street, BROOKLYN N. Y.

Digitized by Google



'06 Cars Won't be complete unless equipped with a top of some make. Why not specify **LONDON TOPS**? They are absolutely dependable as to design, material, fit and workmanship.

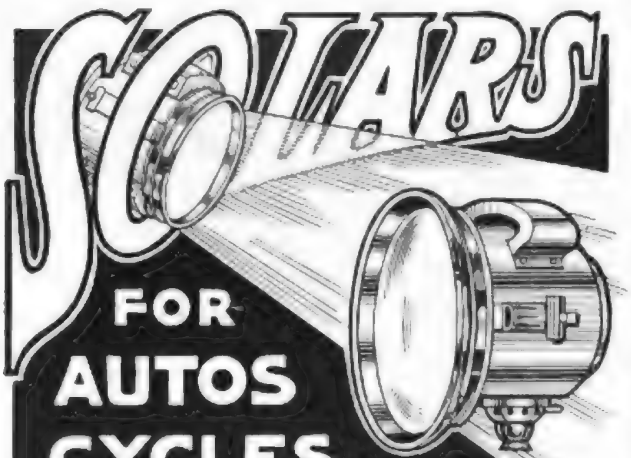
Nothing better can be produced.

London Auto Supply Co., 1229 Michigan Ave. CHICAGO

Chicago Agents for the

St. Louis Supplementary Spiral Springs

SOLARS



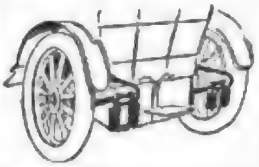
FOR AUTOS CYCLES OR LAUNCHES

MR. DEALER: Why not handle a line that you know will satisfy your customers instead of taking chances on "just as good" lamps. YOUR profit is as MUCH or MORE on Solars, and your customers "stick." Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO.

New York Office, 11 Warren St. KENOSHA, WIS.

SUPPLEMENTARY SPIRAL SPRINGS



Save Your Car, Your Tires, Your Engine and Your Back

In the recent New York Motor Club's 6-day

ECONOMY TEST

among the contestants were three Reo cars. Two of them were equipped with our Supplementary Spiral Springs. The other one was not. Of the two, one won first in the entire contest. One captured first prize for cars of its class. The third pulled into Albany with hopelessly busted springs—completely out of the contest. The driver of that spring-disabled car said he would have paid *any price* for a set of Supplementary Spiral Springs, but it was *too late*. Will you also wait until it is too late or will you write us at once for complete descriptive matter, prices and other proof of our claims? The price is the smallest thing about them—their merit, the biggest. They save your tires, engine, car and back. Make all cars ride easy, and all roads smooth. Let us send you our line of literature. Write.

SUPPLEMENTARY SPIRAL SPRING CO.

4527 Delmar Ave., St. Louis, Mo.

FAST COLOR AUTOMOBILE TOPS THAT NEVER LEAK

CAN BE MADE OUT OF THE

KOKUK FABRICS

A GUARANTEE With All Goods Bearing This TRADE MARK

TRADE KOKUK MARK REGISTERED

MANUFACTURED EXCLUSIVELY BY

F. S. CARR

74 Pearl Street, BOSTON, MASS.

Digitized by Google

Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models—40 and 60 H.P.

Our New Factory now building, in.... **WILKES-BARRE, PA.**
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....Holyoke, Mass.

MATHESON MOTOR CAR CO.

GAS-AU-LEC

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the best Materials Obtainable

The Simplest Gasolene Car in the World
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, $5,000

Corwin Manufacturing Company
Peabody, Mass., U. S. A.

"THE SIMPLE CAR"

GALE

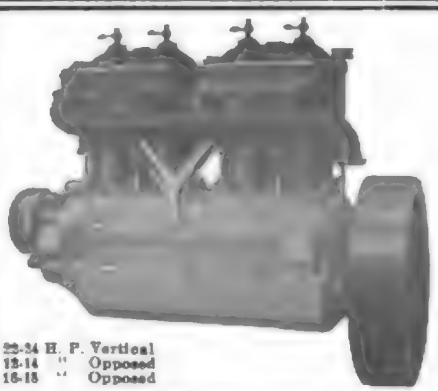
1906 Model "D" **$650** Minus Top $600

WHEEL-POST CONTROL. ROLLER BEARINGS to rear axle
ANY TIRES. 28x3. Pneumatic, Solid or any other kind
Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

WESTERN TOOL WORKS GALESBURG ILLINOIS



22-24 H. P. Vertical
12-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google

Try It Before Paying—

IMPERIAL-WIXON
COMPOUND AIR PUMP

We are so sure that you will agree that it is the best automobile tire pump made that we leave the decision to you.

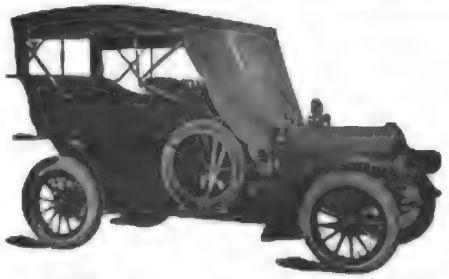
$5.00 ON APPROVAL

Makes the tire last longer.
Works easily, quickly, effectively.
If you own an automobile, you need an Imperial-Wixon.
Ask any dealer or drop us a line.

IMPERIAL BRASS MFG. CO.
249 S. Jefferson Street, CHICAGO
Motor Car Equipment Company, 55 Warren St., New York
Sole Export Agents

Pat. allowed

CATALOGUE ON REQUEST



APPERSON BROS., KOKOMO INDIANA

HIGHEST GRADE ONLY

Aluminum Castings

THE ALLYNE BRASS FOUNDRY CO.
CLEVELAND AND DETROIT

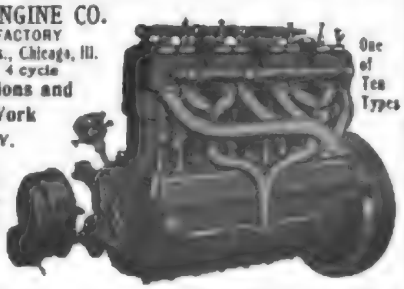
Veeder
ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $20.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

MOTORS — All Commercial Sizes
CONTINENTAL ENGINE CO.
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.



One of Ten Types

4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.

Telephone North 1607

VERTICAL AND HORIZONTAL

Baldwin Automobile Chains and Sprockets

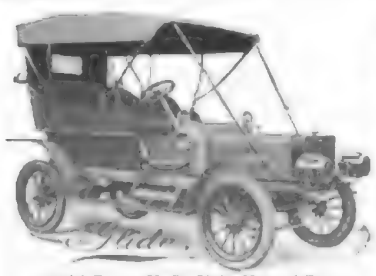
Best Material

Accurate Construction

SEND FOR CATALOGUE

BALDWIN CHAINS AND SPROCKETS

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.
K. Franklin Peterson, Western Sales Agent
105 Lake Street, Chicago, Ill.



Model E. 30 H. P. Glide, Vertical Four-Cylinder Motor

1906 MODELS
Now Ready

Model E is a 30 H. P. vertical four-cylinder car with bevel gear drive.

Model F is an 18 H. P. two-cylinder opposed car and shows lots of speed and hill climbing power.

WRITE FOR CATALOGUES OF THESE NEW MODELS

The BARTHOLOMEW CO., 415 Bradley Av., Peoria, Ill.
Chicago Representatives, Holmes-Schmidt Motor Co., 1502, Michigan Ave.

Lexington Hotel
22d and Michigan Blvd
Absolutely Fireproof

European Plan—$1.50 and up per day.

The nearest and most convenient hotel to the Automobile District and Exhibition Halls for the February Show—special rates by the week

INTER-STATE HOTEL CO.
Owner & Prop. E. K. Criley, Pres., T. M. Criley, V. Pres., L. H. Pirey, Sec.-Treas.

Digitized by Google

The Standard American Cooler

THE WHITLOCK COOLER

Was used on the LOCOMOBILE RACER THAT FINISHED THIRD IN THE VANDERBILT CUP RACE. It was never touched during the race. IT DID ITS FULL duty. It held its water and kept the engine cool.

The Only Cellular Coolers Made in America

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race. Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY** The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

THE WHITLOCK COIL PIPE CO.
Hartford, Conn.

PECK PILOTS

SELECT YOUR LAMPS for SERVICE and LIGHT

These are the two features that are important to your comfort.

PECK PILOTS

project a powerful light and are very strongly made — notice the rivets and bolts. Why not specify them and include our perfect Touring Generator to complete the equipment?

Prices on application.

THE SCOVILLE & PECK CO., NEW HAVEN, CONN.

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD
WEED CHAIN TIRE GRIP CO.
SEND FOR BOOKLET "C" 28 MOORE ST.
NEW YORK CITY.

STOLP COOLERS

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

Patents Pending

Automobile Bows

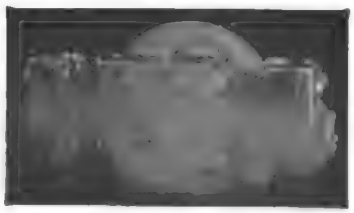
ARE BEST

made of tough second growth ash, because they are light, durable and retain their shape well. We make them any size, any width and any height. Are in position to fill orders promptly and solicit your inquiries.

S. N. BROWN & CO., Dayton, Ohio

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

LATEST TYPE **WILLARD** LATEST TYPE

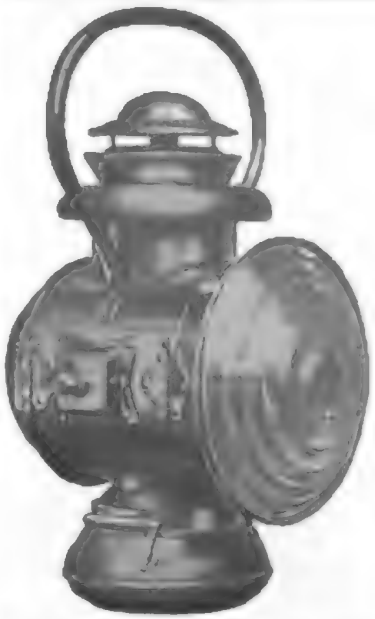
STORAGE BATTERIES

Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company
Cleveland, Ohio



The Lamp of 1906

The greatest light-producing oil lamp ever made, is the TOURIST Cold Blast, now ready for delivery.

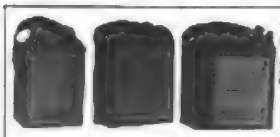
SEE THE LENS?

The HAM Lamps are built on the only correct principle to obtain perfect combustion and are absolutely reliable guides to safe paths. Wind proof, will not jar out, do not smoke, emit no odor, and burn steadily without flickering.

Avoid lamp troubles by insisting that your car is equipped with HAM Lamps.

Write for booklet showing complete line.

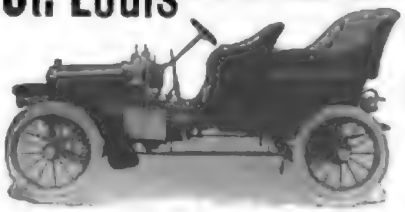
C. T. HAM MFG. CO. Rochester New York



Voltage—4, 6 and 8
Capacity—
20 Amp.—Hours
Prices—$6, $9, $12
Other styles—
$3.25 to $32.00.
Established 1890
Catalogues on Request.

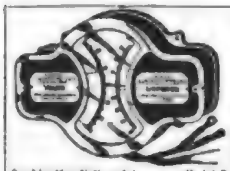
AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.

St. Louis 18-22 30-34 **Actual H. P.**



"RIGS THAT RUN"—We Make Them

ST. LOUIS MOTOR CAR CO.
PROSPECT HEIGHTS PEORIA, ILL.



Weston Electrical Instrument Co.

Electrical Measuring Instruments for use in

Electrical Carriages and Charging Stations

Send for Catalogue

Main Office and Works: Waverly Park, NEWARK, N. J.
New York Office, 74 Cortlandt Street

Combination Volt and Ammeter, Model R

Switchboard Int'l Type R

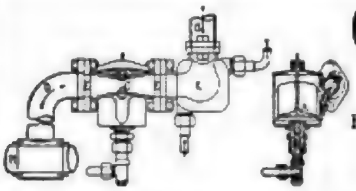
WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.



G. & A. CARBURETTORS

ARE GUARANTEED AUTOMATIC

By actual tests of the leading French makers. Float Feed Carburettor without complicated parts in many so-called "Automatic Carburettors" gives constant mixture at all speeds of motor.

FURTHER INFORMATION ON APPLICATION

ASTER CO., 1591 Broadway, New York

Graphite for the Motor

DIXON'S GRAPHITE

Motor Lubricants

Interesting booklet and samples FREE.

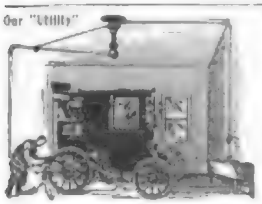
Joseph Dixon Crucible Co.
Jersey City, N. J.

MOTOR CAR SPECIALTIES and SUNDRIES

WE SELL EVERYTHING
WRITE FOR CATALOG

THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

Our "Utility"



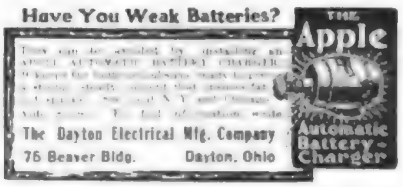
Overhead Washing Machines

A Time, Labor and Money Saver.
For Public and Private Garages. No garage is complete without them.
Send for descriptive pamphlet and prices.

A NECESSITY TO EVERY AUTOMOBILE OWNER

THE H. NICKOLSBERG MFG. CO., 68 Dey Street, NEW YORK

Have You Weak Batteries?



The IGNITION PROBLEM is SOLVED

in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.
No Batteries. No Coil. No Commutator.
Everything for Electrical Ignition.

LEON RUBAY, Sole U. S. Agents, 140 W. 38th St., N.Y.

A LUBRICATOR FOR ANY CAR, ANY SYSTEM

An automatic pressure feed oiler instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending

Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.
New Haven, Conn.

Special Design Finest Quality Built to Order

BODIES AND TOPS

C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

THE "Exide" BATTERY for Electric Vehicles

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

CLEVELAND, 404 Huron St. NEW YORK, 49th St. & 8th Ave. PHILADELPHIA, 250 N. Broad St. BUFFALO, 649 Main St. ROCHESTER, 150 South Ave. BOSTON, 30 Stanhope St. DENVER, 1449 Clarkson St. SAN FRANCISCO, 635 Howard St. CHICAGO, 204 E. Lake St. ST. LOUIS, 2944 Olive St. ST. PAUL, 372 Minnesota St. DETROIT, 265 Jefferson Ave. PITTSBURG, 5906 Centre Ave. SAVANNAH, 309 Bull St. LOS ANGELES, 334 S. Main St. MINNEAPOLIS, 3d Ave. S. & 5th St. PASADENA, 35 S. Raymond Ave. PORTLAND, ORE., 140 Fifth St., N.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, PA.

SALES OFFICES: New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada

REST YOUR TIRES with the "Springfield" Auto Lift

Showing Lift in Position to Receive Car.

You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

E. J. DAY & CO., Pacific Coast Agents, San Francisco

THE SHAWVER CO., Springfield, O.

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

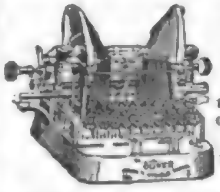
ALUMINUM CASTINGS BRONZE

We Want Agents for the

OLIVER Typewriter

—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

FOR AUTOMOBILE

USED BY THE LARGEST MANUFACTURERS

HARRIS OIL

Sold at all Principal Garages

A. W. HARRIS OIL CO.

330 South Water St., Providence, R. I.
and
56 Fifth Ave., Chicago

LUBRICATION

"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.

39 Cortlandt Street New York City

MAT'S BODY POLISH

Prevents the Finish from Cracking or Staining

Used by the Chicago Garages. Send for sample.

$2 PER GAL. MAT. WEIS

1412 Michigan Avenue, CHICAGO

Keep Your Feet Warm

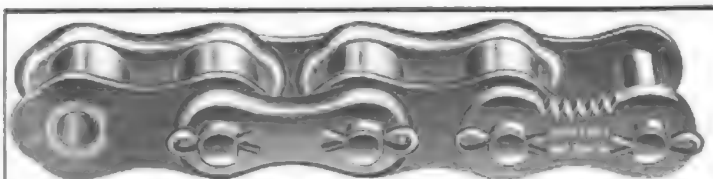
and you will be warm all over.

The H. & H. Auto Heater

Does the Trick Right.

No fuel. No smell. Just pure air. Get our Catalogue. Address

285 N. State St., Chicago



"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

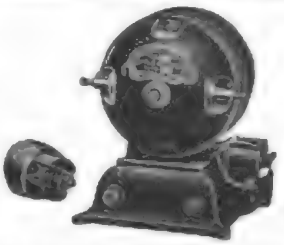
Digitized by Google

Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical, 3½x3½ in., 12-14 B. H. P
Water cooled, 4 cylinder, vertical, 3½x3½ in., 14-16 B. H. P
Water cooled, 4 cylinder, vertical, 4x4½ in., 20-22 B. H. P.
Water cooled, 4 cylinder, vertical, 4½x5in., 35-40 B. H.P.

MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.



THE AMERICAN
LITTLE WONDER DYNAMO

Has system of storage in the base; requires no other batteries for starting. If you desire a first-class machine at a low price, be sure and get the LITTLE WONDER. Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.

AMERICAN COIL CO., Foxboro, Mass.
Pacific Coast Branch, 306 McAllister St., San Francisco

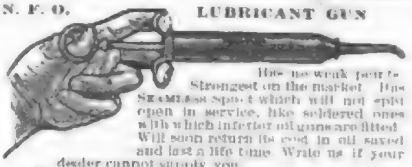
For Boiled Down Information About

AUTOMOBILES in general & WELCH CARS in particular

address

WELCH MOTOR CAR CO., DETROIT, MICH.
Factory, Pontiac, Mich.

N. F. O. LUBRICANT GUN



Has no weak parts. Strongest on the market. The Seamless Spout which will not split open in service, like soldered ones with which inferior oil guns are fitted. Will soon return its cost in oil saved and last a life time. Write us if your dealer cannot supply you.

New York & New Jersey Lubricant Co
14 Church St., N. Y. 79 9th St., San Francisco

Electric Signs

Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.

U. S. ELECTRIC SIGN CO., Muncie, Ind.

Specify ...an... Auto Cle on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.
Old Colony Building :: :: Chicago

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

SPECIAL AUTO PARTS

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

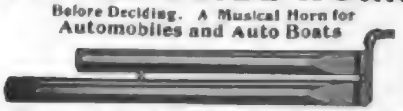
AUTO BRASS & ALUMINUM CO., Flint, Mich.

SPRINGFIELD TOPS
3, 4, and 5 Bow
Aluminum Bodies

Springfield Metal Body Co
72 Dwight Ave.
Brightwood
SPRINGFIELD, MASS.

BY ALL MEANS HEAR
THE GABRIEL HORN

Before Deciding. A Musical Horn for Automobiles and Auto Boats



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—two, three or four horns.

Write today for Catalogue, giving prices and full information.

GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 86th St.

BESTOGO STORAGE BATTERY

Essentially different from other Lead Batteries

SEND FOR CATALOG

Miller Signal Co., 362 JACKSON BOULEVARD, CHICAGO

Anti-Freezing Calcium Chloride

In cooling water of Automobiles Won't Rust or effect the metal. Freezing point 54° below zero. Non-precipitating.

Write For Our Circular

James H. Rhodes & Company,
107 E. Kinzie St., Chicago.

DUST-DEFLECTORS

MAKE MOTORING AS DUSTLESS AS SAILING

$20 Brings relief from dust for the rest of your life. BOOKLET TO INQUIRERS.

W. H. BROWN, Lennox Bldg., Cleveland, O.

GRAY & DAVIS HIGH GRADE LAMPS

AMESBURY, MASS

POCKET
Battery Ammeter

0 to 30 Amperes

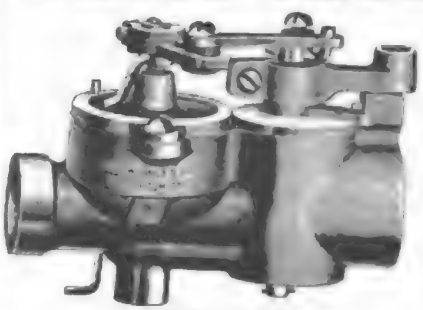
Indicates in any position and in either direction of current.

In testing single cells, the cord is not necessary.

Price $3 50

ELDRIDGE ELECTRIC MANUFACTURING CO.
Springfield, Mass.

Garllus Carburetor



Automatic Flootless

Manufactured by

The Winkley Co.
Box 243
Detroit, Mich.

PATENT PENDING

Chicago and Cincinnati

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

Monon—C. H. & D.

Ride this way once and you'll ride again—we think.

CHAS. H. ROCKWELL, Traffic Manager. CHICAGO FRANK J. REED, Gen. Pass. Agt.

Digitized by Google

"E. & J." LAMPS
GAS AND OIL SIDE-LIGHTS
Copy of our 1906 Catalogue mailed on request
The EDMUNDS & JONES MFG. CO.
DETROIT, MICH

No-Mor Auto-Freeze
put in your circulating system keeps the water from freezing all winter.
At dealers' or write to
Owen Chemical Co.
45 Vincent St. Cleveland, Ohio

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

WITHERBEE

Storage Batteries
are used and endorsed by forty-two of the leading automobile manufacturers.
Specify the WITHERBEE and avoid ignition trouble. Satisfaction guaranteed or purchase money refunded.
Sold by the leading jobbers. Write for descriptive pamphlet.
WITHERBEE IGNITER CO.
541 West 43d St. NEW YORK

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX.
FAYETTEVILLE, N. Y.

Buy A
WAYNE
and save all argument

Eclipse Tops
LOOK BETTER
WEAR BETTER
MADE BETTER
ARE BETTER
than any others. It's an old story with us. We have been making GOOD tops practically all our business lives.
Write for catalogue.
Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

Gasoline —SELF— MEASURING **Outfits**
For the Automobilist and the Garage.
Guaranteed non-evaporative, airtight, no-leakage.
From tank into automobile reservoir.
Tank underground—Pump in building.
Write for Catalog "M"—it will surely pay you.
WESTERN OIL PUMP CO.
2400 Kosciusko St., ST. LOUIS, MO.

ORIGINAL MANUFACTURERS OF
AUTO TOP MATERIALS
We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.
Write for samples and price list.
L. J. MUTTY CO., Boston, Mass.

CANDY CARBIDE
For FRENCH AUTO LAMPS (Impregnation dans le vide)
Packed only in 10 lb. cans. Price $2 each.
Discount to dealers in case lot of 12 cans
SOLE MANUFACTURERS
ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET. NEW YORK

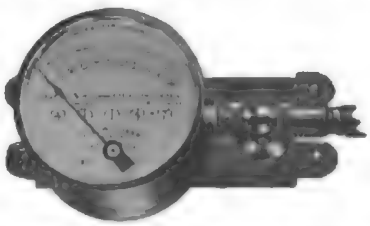
¶ The Automobilist who today doesn't include a Jones Speedometer in his list of accessories is eliminating two thirds of the pleasure of automobiling—and is encouraging the officer of the law to make his arrest.

¶ When the Judge says: "Did you have any *positive* means of determining the speed at which you were traveling?"—he is asking if your car was equipped with a Jones Speedometer. Don't forget that!

¶ The Mounted Officer with his primitive stop-watch method of timing the Automobilist can seldom make a case. Guess work testimony doesn't go in court. The Officer means well, but his method is wrong.

¶ Our Speedometer Bulletin contains speed information and tells of our Protection Tag. Free on application.

JONES SPEEDOMETER
122 West 32d Street, New York

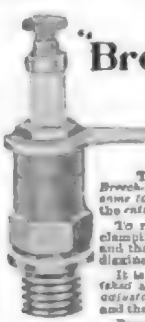


SURETY

Messrs. Clemens & Merz were sure of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1,096 miles. You can always be just as sure of any of the 47 sizes of improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your new car and save bother.
THE R. E. HARDY CO.
225 West Broadway, New York City
Garden Show Space, No. 78. Armory Show Space, No. 81. Coliseum Show Space, No. 178.

PACKARD ENAMELED IGNITION CABLES
NEVER DISAPPOINT
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?
PROOF AGAINST HEAT, GREASE, OILS and WATER
THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

The "Breech-Block" Plug



The Plug With a Handle

To take out your watch or open a *Breech-Block* requires just the *same time, same tools, same effort,* and *one* twist cleans the *entire* porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of its holder, and the gaskets of copper drop with it. No cleaning!

It is *nickeled* inside and out. *Highly polished* and *dust-proof.* Sparks between *two separate* points and not between *one* point and the *shell.* Its points are *protected.*

Porcelains are *hand turned* and so perfectly glazed that soot cannot *stick* to them. Their *threads* are cut to perfection, and every particle of the idea of cheapness is left out of them.

Postpaid, Anywhere, $2.50. Booklet Free. Made by
EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

READ MOTOR AGE ... $2.00 per Year

Digitized by Google

HOLLEY
CARBURETORS

Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Touneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00
Two-cylinder Queen	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD AND FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1297

1440 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1321 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: :: PHONE CALUMET 1063

1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—MOLINE 4-cyl. 30 h. p. side entrance, new $1250; Moline, 2-cyl. 12 h. p. side entrance, new, $800; Hoffman 10 h. p. tonneau, new $600; Murray runabout, $300; Oldsmobile, $250; Buckboard, $300; Gale, 8 h. p. new, $800; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Frayer-Miller" "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1210-1218 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

POPE

-TOLEDO
-HARTFORD
-TRIBUNE
-WAVERLY

ORLANDO F. WEBER CO.

(INCORPORATED)

Distributors for

CHICAGO and MILWAUKEE

1322-26 Michigan Ave. Phone 1402 South

231-35 Fourth St. Phone 2781 Main

EVERYTHING IN

AUTO SUPPLIES

FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1528 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

REO

SEND IN APPLICATION

RALPH TEMPLE

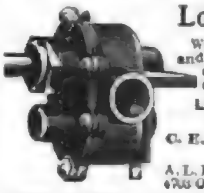
309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO



Lobee Gear Pump

Well adapted for Oldsmobile and other makes. Works with any type of radiator. Easily attached. Write for prices.

LOBEE PUMP CO.,

260 Terrace, Buffalo, N. Y.

C. E. Miller, Agent,

97 Reade St., New York

A. L. Dyke Automobile Supply Co.

4703 Olive St., St. Louis, Mo.

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

ROBERT VOLT-AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS

30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.

55 Shelby St. Detroit, Mich.

Digitized by Google

"TRIUMPH" GASOLENE TANK GAGE

Applicable to tanks with or without pressure to show quantity of gasolene.

SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

You will find

lots of advertisements of coils, plugs, circuit-breakers, switches, etc. in the papers, you will recognize them by their lack of arguments. Their products have no special merit, the makers got to dig up the most trivial points, which every article of this kind should possess.

We will send you a book of arguments free: Our new catalog.

WHAT WE HAVE:

The HERZ TIMER—16 models, to fit any make of motor: Remember: It's TOOLSTEEL vs. TOOLSTEEL.
Bongie Mercedes—double stone.
Herz-Distributor—1 coil for all cylinders.
Guenet Coils. Carpentier-Interrupter.
New prices—Single, $16; double, $20; triple, $30; quad, $50.

A line of switches of original design; contacts dust-proof covered.
Detachable terminals.
Wire terminals with groove.
Special ignition cables and wires.
Everything for the ignition.
One grade: The best.

HERZ & CO. Civil Engineers
187 Elm Street, New York

Write for free Vademecum of Ignition.

Force Feed Lubrication

Constant Sight Feed. No Liquids

McCord & Co., 1402-80 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
324-326 Golden Gate Avenue, San Francisco, Cal.

THE SOLVAY PROCESS COMPANY'S "KAL-KRYSTAL"

makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses.

CARBONDALE CHEMICAL CO.
739 UNITY BLDG., CHICAGO

Standard Roller Bearing Co.

STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles

Send for Catalogue. PHILADELPHIA

A Swell Joint

The acme of specialization—the limit of excellence—is represented in our

Universal Joint and Brake Drum

Your closest investigation of our claims will PROVE that NOTHING BUT THE BEST in EVERY RESPECT is used. Write us TO-DAY.

SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.

Direct factory representatives: E. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

Complete Lists of Auto Owners, Dealers, Garages and Jobbers

MOTOR DIRECTORIES CO., Inc.,
Successor to
AUTO DIRECTORIES CO.,
108 Fulton St., N. Y. City

Auto Top Bronzes

Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.

C. W. COOPS CO.
3 Appleton St., Boston, Mass.

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System
"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., XV Ft Wayne, Ind

VALVELESS-PUMPS

WITHOUT STUFFING BOXES OR SPRINGS

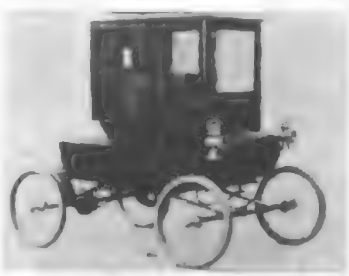
All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue

Madison-Kipp Lubricator Co., Madison, Wis.

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.
69 Vestry Street, NEW YORK CITY



A high class Coupe Top. Fits Olds Standard Runabout, can be attached in thirty minutes and detached in ten. Front glass hinged and can be raised at will. Price, $60.00. Write for full description.

The Fellwock Autotop Co., Evansville, Ind.

1905 YANKEE GRADE METER. PRICE $7.50.

This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.

Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 60,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

E. J. WILLIS CO., 7 Park Place, New York

THE U. S. JACK

WITH UNIVERSAL HEAD

LIFTS ANY WEIGHT CAR UP TO 6000 Lbs

A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 51-4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

U. S. JACK CO., 352 S. Claremont Av. Chicago

Simplicity Automobile Extension Cape Tops
Simplicity Spray Hoods

CHARLES P. McCLELLAN, Fall River, Mass.

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY
WRITE FOR SAMPLES AND PRICES
MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

SPROCKETS

Gears and Differentials

DITMAN WHEEL CO.

Digitized by Google

This is NOT
A FAIRY TALE
We guarantee to increase the spark in your cylinders by
ONE HUNDRED PER CENT
Through our PATENTED
Steel Armored Ignition Cable
Adopted by the Leading European Firms
It is sold cut to the required lengths complete with all terminals. Send us your requirements. Do it now!
HERZ & CO., Civil Engineers 187 Elm St., New York
The largest manufacturers of Ignition Material in America.

Peerless Automobile Jacks
Made in 2 styles and 5 sizes. They are automatic, and their movements are a model of simplicity, are absolutely safe, and cannot drop. Working Handle below center raises, above center lowers. Works at any angle. No. 15, like cut, for vehicles of 2 ton, height 10 inches, rise 7 inches, weight 4½ lbs., price $2.50. Express prepaid in the United States. OLIVER MFG. CO., 205 S Desplaines St., Chicago, Ill.

C. O. T. ACID CURE SOLUTION AND VULCANIZING FLUID.

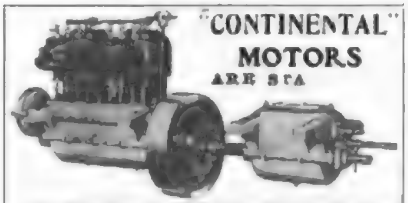
WHY worry over a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber size of cut. Not loosened by heat. Plain rubber patches both round and oblong.
CHAS. O. TINGLEY & COMPANY
Rahway, N. J.
Beckley-Ralston Co., Chicago, Ill., West. Dis.
Phoenix Auto Supply Co., Southwestern Agents.

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is economy and satisfaction in having such work done outside of the city.
W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 371 Wabash Ave.

The Old Reliable

MOTOR AGE
Gets the News
Get Motor Age
$2.00 a Year.
309 MICHIGAN AVE., CHICAGO

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES
HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

"CONTINENTAL" MOTORS ARE 81A

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 4 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car.
BIGGEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE
AVOID INFERIOR IMITATIONS
ASK FOR CATALOGUE
Continental Motor Mfg. Co. 240-244 W. Lake St. CHICAGO
K. F. PETERSON, Direct Factory Representative

EVERYTHING FOR
Man, Motor and "Mechanician"
Specialties and Leather and Wool Winter Clothing
A. L. DYKE AUTO SUPPLY CO.
OLIVE AND WALTON STREETS
ST. LOUIS, MO.
ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas

SOMETHING NEW
IN BOTH AIR AND WATER COOLED MOTORS WRITE US FOR PARTICULARS
FAST MCH. & TOOL WKS.
25th and Greenfield Aves. MILWAUKEE, WIS.

HOT SPRINGS, ARK.
Only 20½ Hours from Chicago
VIA THE
WABASH
You can leave Chicago daily at 11:30 A. M., on the
BANNER BLUE LIMITED
the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.
Write for free Booklet telling all about this popular health and pleasure resort.
Ticket Office, 97 Adams St.
CHICAGO
C. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A., Chicago.

Diamond Chains
Our chains outwear all others. Replace your worn-out chain with a "Diamond," which fits any standard sprocket.
DIAMOND CHAIN & MFG. CO., Indianapolis

"KENT POCKET METERS"
Accuracy Guaranteed

Volt-Am-meters, 0-5V., 0-20A., Price $6.00.
Volt meters, 0-5V., $5.00.
Ampere meters, 0-20A, $5.00.
Discount to trade.
ATWATER KENT MFG. WORKS
115 N. 6th St. Philadelphia, Pa.

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE—Searchmont auto body with detachable tonneau; finely upholstered in leather; in perfect condition; price, $25. E. B. S., Ossining, N. Y.

HAVING ordered my 1906 car, will sell my 1905 buckboard for $175; in A1 condition. Paul Houkavara, Palmer, Mich.

WILL TRADE for good '05 2-seated automobile, my match team drivers, Morgan mares; woman can hitch them; 7 and 8 years old; 2-seated surrey, stick seat, canopy top, nice as new, and harness. A. R. Koehler, Macedonia, Iowa.

Very Low Excursion Rates For Christmas Holidays.

To all points on the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, with limit returning January 3, 1906. Rate one and a third fare for the round trip. Individual Club Meals, ranging in price from 35c to $1, and Mid-day Luncheon, 50c, served in Nickel Plate dining cars; also service a la carte. No excess fare. Chicago city ticket offices, 111 Adams St. and Auditorium Annex. Depot, La Salle and Van Buren Sts., the only depot in Chicago on the Elevated Loop.

FOR SALE—One 1905 Pierce Great Arrow, in A1 running condition; also top regular equipment. Address C. F. K., 1293 Woodward Ave., Detroit, Mich.

COMPETENT MEN as instructors in progressive automobile school; must undergo examination and show fitness for the work. Instructor, care Moron Aug.

WANTED—Model "B" Cadillac; must be in first class condition; same tires, lamp equipment and accessories and price. R. T. Davis, Jr., 26 S. Water St., Cleveland, O.

FOR SALE—A job lot of secondhand machinery, gas engines, boilers and engines, lathes, drill presses, steam pumps, water well drilling machine. Redick Mfg. Co., Spencerville, O.

FOR SALE—Very cheap: Ford four-cylinder, Ford two-cylinder, Winton two-cylinder, Rambler two-cylinder, Improved Rambler E. one-cylinder. Orient buckboard, mostly 1905 cars. Prices and descriptions extremely interesting. A card will bring the information. E. S. Youse, Reading, Pa.

FOR SALE—One new 12-15 H. P. three-cylinder, air-cooled auto engine, with Shebler carbureter—triple coil, timer, plugs and fan, all complete, guaranteed, $135. A. P. Robertson, Noblesville, Ind.

FOR SALE—28x2½ inner tube, little used, one puncture, $2. Also brass pump, good condition; price $1, delivered. F. E. Wallace, Monmouth, Ill.

FOR SALE—4 H. P. Orient engine, with all accessories, $50; running gear, with new tires, $35; P. transmission, $10. Cash, no trade. E. M. Morley, Hillsdale, Mich.

FOR SALE—Farm, 82 acres, good buildings. Will take auto in trade. Lock Box 232, Parkman, O.

FORD BARGAIN—1904, Model C, 10 h. p. Ford auto; detachable tonneau, full lamp equipment, searchlight, Blanchard French horn, two extra tires and all modern appurtenances. Good condition. E. C. Clark, Paducah, Ky.

FOR SALE—1905 Olds touring car, 10 h. p.; A1 condition, having been used on paved streets. Address L. W. Huckins, Shreveport, La.

FOR SALE—Attachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

FOR SALE—Packard Model L; first class condition, recently thoroughly overhauled at factory; extra equipment, 4½ inch Diamond tires on rear wheels; brass plated Veeder dashboard odometer; Hartford suspension on rear springs; complete set of oil cups on spring bolts; Gray & Davis acetylene lamps with Solar generator; B. & J. lockswitch; T. P. C. tire pump; muffler cut-off for attaching Gabriel horn; large dope cup on dashboard feeding driving shaft, steering wheel bearings; also two bearings on commutator shaft; cup has two extra feed pipe connections. Price, $2,300 cash.

Autocar—Tonneau fitted with extra seat; engine recently overhauled and put in first class condition; guaranteed as good as new; tires extra heavy and recently purchased; full lamp equipment. If you want a first class machine at a bargain, write the Michigan Stove Co., 1022 Jefferson Ave., Detroit, Mich.

NEW TIRES, 28x3½, $9; RUBBERINE FILLED, $13.50 28x2 rubberine filled, $16. 30x3½ or 4 rubberine filled, $22 to $26. Rubberine saves tires, time and worry.
Automobile Palace, 152 W. Jackson Bl., Chicago

FOR SALE—Premier, Model F, 1905, four cylinders, air cooled, 16 h. p., side entrance, Studebaker top, glass front, side curtains, Presto light gas tank, four new lamps, tools, etc. Almost new. Cost $1,750. Price, $1,000 cash. *No trades.* A. B. Clay, 1240, 324 Dearborn St., Chicago. Phone Harrison 2375.

FOR SALE—Double chain drive transmission and other automobile parts. W. Roulet, 107 Washington St., Chicago.

WILL TRADE ten or twenty acres of garden land, 10 miles west of Toledo, Ohio, on interurban line, for automobile. H. G. Welsh, 314 North Main, Hutchinson, Kan.

FOR SALE—1 9-h. p. engine, transmission, spark coil and tanks at a sacrifice; better than new; if taken at once. $85 cash with order. "O. L." care MOTOR AGE.

WANTED—Manager and salesman with $1,000 to $2,500 cash in automobile company in eastern Iowa. Address Iowa, care MOTOR AGE.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; brand new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

FOR SALE—Franklin, model E, runabout, in excellent condition; run six months; gas lamps, oil lamps and gas tank. L. E. Voorhes, 942 West Fifth St., Cincinnati, O.

FOR SALE—$325 takes my 1902 Model Winton touring car; paint is good, in good running order and is fully equipped. Edw. E. Gifford, Cochesett, Mass.

FOR SALE—Packard late 1903 Model F; recently overhauled at factory. Will equip with brand new tires and sell for $750 cash. First check takes it. H. W. Beach, Montrose, Pa.

FOR SALE—1905, 50 H. P. Thomas Flyer, cape top, glass front, Gabriel horn, Hartford shock absorbers, five lights, perfect condition; a bargain; owner purchased 1906 Thomas. Address L. R. Clinton, Binghamton, N. Y.

FOR SALE

THOMAS TOURING CAR—1904 model; 3-cylinder; seats five persons; perfect condition; thoroughly overhauled by factory recently; this car was driven by the owner eleven hundred miles from Macon, Mo., to Buffalo without an accident and never missed fire once on the trip; new tires this season; I refer to the E. R. Thomas Motor Co., of Buffalo, as to condition of car; my reason for selling is that I have purchased a larger type car; price and full description on application. Address owner, William R. Compton, Macon, Mo.

FOR SALE—8 H. P. Olds engine in runabout car; 2 new Morgan & Wright tires; $200. Box 143, Cayuga, Ind.

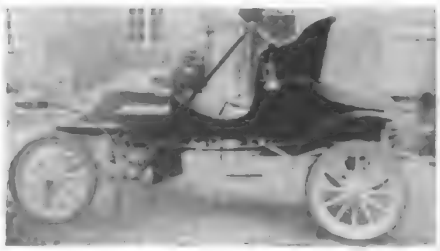
FOR SALE—1905 Oldsmobile light tonneau car; 10 horsepower; paint, machinery and tires good as new; cost, with extras, $1,050; a bargain at $850. Address Ed Connine, Wexford, Mich.

WANTED TO TRADE—New Simplex piano player for second-hand automobile; 28 pieces with it. Cost $310. What have you to offer. L. C. Larson, Sioux Center, Ia.

FOR SALE—1905 Packard, side entrance; $2,500. E. C. Bull, No. 754 Main St., Buffalo, N. Y.

Logan

That Car of Quality



10 H. P. Two cylinders opposed, air cooled sliding gear transmission. Chain drive. Weight, 650 lbs. Speed, 30 miles per hour. Price, **$900.**

The Logan 1906 Runabout

is the most powerful car of its type on the market. One horse-power for every 85 lbs. of car weight. Is the ideal conveyance for physicians and business men, as well as for pleasure.

Our 1906 line embraces six cars for a wide range of uses,—each the most practical of its kind. Every feature is founded on experience.

Write for our new Catalog A-123 giving description of entire line

The Logan Construction Co., Chillicothe, Ohio

FOR SALE—Packard Model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,00 0if taken at once. Bates-Odenbret Auto Co., Milwaukee, Wis.

Scrap Auto Tires
We Buy Them
LAUN-CARLSTEN CO., 90 Metropolitan Blk., Chicago

FOR SALE—New two-cycle gasoline engine, ½ h. p., $30. J. Hall, Mound City, S. D.

FOR SALE—1½ h. p. motor cycle engine, $20. C. Shook, Waterloo, Iowa.

WANTED—Automobile in exchange for good lots or land, will give a good trade. Box 81, Independence, Iowa.

1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. C. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

HIGH-GRADE Marine and Automobile Engines, 2 and 4 cycle, 2 to 30 h. p. Lowest prices. A. J. Houle Motor Works, S. East St., Holyoke, Mass.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 20 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, $75; cost $150. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—Party to take interest in good paying business; must be able to invest from $1,000 to $2,000; must be capable of doing office work. Address Reas & Co., Top floor Pratt Block, Kalamazoo, Mich.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; $425. C. W. Travis, Evansville, Ind.

Christmas Holiday Excursion Rates

Via the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, at a fare and a third for the round trip, with return limit of January 8, 1906. Through train service to New York City, Boston and other eastern points. No excess fare. Individual Club Meals served in Nickel Plate dining cars. Three through trains daily from La Salle and Van Buren St. Station, the only depot in Chicago on the Elevated Loop.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price $1,000. Ralph E. Clarke, Coldwater, Mich.

FOR SALE—4¼x4 opposed engine castings; complete, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

AUTOMOBILE—Cadillac, B model; good order; cheap. The Globe Chemical Co., Court and Deercreek, Cincinnati, Ohio.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE—10 H. P. transmission, $30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

$300 GROUT SURREY. Thoroughly overhauled; fine condition. Dr. Frank Graham, Tennessee Trust Bldg., Memphis, Tenn.

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas headlights, cape top, portfolio, extra tool boxes, complete tool equipment, including some specials, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make an offer. Box 71, care MOTOR AGE.

Digitized by Google

The "B. & S." Auto Wrench

DOES YOUR 1906 KIT CONTAIN IT?

IS THE WRENCH WITHOUT A RIVAL

The Billings & Spencer Co.

HARTFORD, CONN.

Your $5.00 Back

If after 30 days' trial you don't feel absolutely sure the

SKINNER

COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

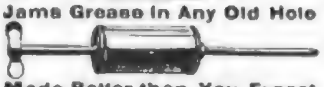
Compact, light and convenient for carrying.

$5 Express Prepaid

SKINNER & SKINNER, MFRS.
4134 Indiana Ave., Chicago

"GREASJAMMER"

Jams Grease in Any Old Hole



Made Better than You Expect
All Metal Extra Heavy
Large Capacity
SENT PREPAID FOR $1.20

THE MOTOR CAR SUPPLY CO.
1427 MICHIGAN AVENUE, CHICAGO
"EVERYTHING FOR YOU AND YOUR AUTO"

OLD Tires Made NEW
New Tires Made Puncture-Proof

NEWMASTIC FILLING
For Clincher and Single Tubes

Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn

NEWMASTIC TIRE CO.
1383 Michigan Ave., CHICAGO, ILL. Tel. South 1381
ST. LOUIS, MO.

LEA TIRE PUMP

makes pumping easy. Has adjustable crank for short or long stroke. No backache, no "puffing." Gives same pressure on all tires. They last longer.
Book B illustrates it. Write to-day.
Ask also for proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

Hyatt Roller Bearings
TURN FRICTION INTO ENERGY
HYATT ROLLER BEARING CO.
Harrison, New Jersey
ARE YOU FROM MISSOURI?

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co.... 83
Adams Company 72
Adland Motor Co. 84
Aerocar Company 87
Allyne Brass Foundry Co. 78
American Ball Bearing Co. 70
American Battery Co. 80
American Coil Co. 82
Apperson Bros. 78
Aster Co. 80
Atwater-Kent Mfg. Co. 86
Auto Brass & Aluminum Co. 82
Auto Directories Co. 85
Automobile Equipment Co. 80

Badger Brass Mfg. Co. 74
Baker Motor Vehicle Co. 69
Baldwin Chain & Mfg. Co. 78
Bartholomew Co. 78
Beaver Mfg. Co. 75
Berkshire Automobile Co. 73
Billings & Spencer 88
Blomstrom, C. H., Motor Co. 53
Boston Auto Gage Co. 85
Bowser, S. F., & Co. 85
Briscoe Mfg. Co. 76
Brown, S. N., & Co. 79
Brown, W. H. 82
Buckeye Mfg. Co. 66
Byrne-Kingston Co. 67

Cadillac Co. of Illinois 84
Cadillac Motor Car Co. 33
Canedy, Earl 83
Carborundum Chemical Co. 85
Carr, F. S. 74
Champion, Albert, Co. 80
Chicago Auto Heater Company 81
Cleveland Motor Car Co. 46
Coey, C. A., & Co. 84
Columbia Lubricants Co. of New York 76
Continental Caoutchouc Co. 58
Continental Engine Co. 78
Continental Motor Mfg. Co. 66
Coope, C. W., & Co. 85
Corbin Motor Vehicle Corp. 50
Corwin Mfg. Co. 75
Cramp, Wm., & Sons Ship & Engine Building Co. 76
Crawford Automobile Co. 54
Cullman Wheel Co. 85

Dayton Electrical Mfg. Co. 80
Dayton Motor Car Co. 56
Diamond Chain & Mfg. Co. 86
Diamond Rubber Co. 85
Dixon, Jos., Crucible Co. 80

Duquesne Construction Co. 36
Dyke, A. L., Auto Supply Co. 86

E. H. V. Co. 65
Eclipse Buggy & Mfg. Co. 83
Edmonds & Jones Mfg. Co. 83
Eldredge Electric Mfg. Co. 82
Electric Speed Meter Co. 76
Electric Storage Battery Co. 81
Electric Vehicle Co. 32
Elmore Mfg. Co. 48
Excelsior Supply Co. 84

Fairmount Engineering Works 84
Fast Machine & Tool Works 86
Fellwock Autotop Co. 85
Fisher Automobile Co. 40
Fisk Rubber Co. 61
Ford Motor Co. 47
Franklin, H. H., Mfg. Co. 31
Frazier, W. S., & Co. 86

Gabriel Horn & Mfg. Co. 82
Garford Co. 73
Gearless Transmission Co. 58
Gilbert Mfg. Co. 80
Gilhens Bros. Co. 84
Goodrich, B. F., Co. 67
Goodyear Tire & Rubber Co. 68
Gray & Davis 82
Gray-Huwley Mfg. Co. 86

Ham, C. T., Mfg. Co. 80
Hardy, R. E. Co. 83
Harris, A. W., Oil Co. 81
Hartford Rubber Works 56
Hartford Suspension Co. 85
Haynes Automobile Co. 59
Hess & Co. 85-86
Hine-Watt Mfg. Co. 76
Hofeller Brass Foundry Co. 86
Holley Bros. Co. 84
Hyatt Roller Bearing Co. 88

Imperial Brass Mfg. Co. 78
Imperial Wheel Co. 55
Importers Co. 84

Jeffery, T. B., & Co. ..... Cover
Jones Speedometer 83

Kansas City Motor Car Co. 34
Kimball, C. P., Co. 80
Knox Automobile Co. 77
Kokomo Rubber Co. 71

Leather Tire Goods Co. 83
Lester, E. F. 83
Lexington Hotel 78
Link-Belt Machinery Co. 62
Lobee Pump Co. 84
Locomobile Co. of America 41

Logan Construction Co. 87
London Auto Supply Co. 74
Lozier Motor Co. 51

McClellan, Chas. P. 85
McCord & Co. 85
McDuffee Automobile Co. 84
Madison-Kipp Lubricator Co. 85
Marion Motor Car Co. 57
Matheson Motor Car Co. 75
Maxwell-Briscoe Motor Co. 69
Mead Motor Co. 84
Merkel Motor Co. 82
Metzger, C. A. 50
Michelin Tire, American Branch. 62
Miller, Chas. E. 70
Miller Mfg. Co. 70
Miller Signal Co. 82
Milwaukee Steel Foundry Co. 85
Mitchell Motor Car Co. 49
Moline Automobile Co. 68
Monon Route 82
Morgan & Wright ..... Cover
Mosler, A. R. ..... Cover
Motor Age 52
Motor Car Equipment Co. 79
Motor Car Specialty Co. 88
Motor Car Supply Co. 88
Motz Clincher Tire Co. 72
Mutty, L. J., Co. 83

National Motor Vehicle Co. 65
National Spring & Wire Co. 85
Newmastic Tire Co. 88
N. Y. & N. J. Lubricant Co. 82
Nicholsberg Mfg. Co. 80
Nordyke & Marmon Co. 54
Normandie Hotel 72
Northern Mfg. Co. 64

Olds Motor Works 43
Oliver Mfg. Co. 86
Oliver Typewriter Co. 81
Owen Chemical Co. 88

Pacific Tucking & Mfg. Co. 78
Packard Electric Co. 83
Packard Motor Car Co. ..... Cover
Pantasote Co. 83
Pardee-Ullman Co. 84
Pedersen, J. T. 80
Pennsylvania Rubber Co. 60
Peerless Motor Car Co. ..... Cover
Pierce, Geo. N., Co. 77
Pittsburg Reduction Co. 82
Pope Mfg. Co. 55
Prest-O-Lite Co. 75

Railway Appliances Co. 82
Rainier Co. 38
Rhodes, Jas. H., & Co. 82

Robert Instrument Co. 84
Rose Mfg. Co. 68
Royal Battery Co. 72
Royal Motor Car Co. 77
Rubay, Leon 80
Rubber Goods Repair Co. 84
Rushmore Dynamo Works 60-61

St. Louis Motor Car Co. 80
Scoville & Peck Co. 79
Shawver Co. 81
Skinner & Skinner 88
Spicer Universal Joint Mfg. Co. .. 85
Springfield Metal Body Co. 82
Standard Roller Bearing Co. 85
Standard Welding Co. 64
Stanley, John T. 71
Steel Ball Co. 71
Stevens, J., Arms & Tool Co. 85
Stolp Mfg. Co. 79
Streit, A., Machine Co. 79
Supplementary Spiral Spring Co. 74
Syracuse Aluminum & Bronze Co. 81

Temple, Ralph 84
Thomas, E. R., Motor Co. 45
Thompson, Chas. C. 81
Tingley, Chas. O., & Co. 86
Trebert Gas Engine Co. 68

U. S. Electric Sign Co. 82
U. S. Jack Co. 85

Veeder Mfg. Co. 78
Vesta Accumulator Co. 76

Wabash Railway 86
Walker, E. C. Co. 70
Waltham Mfg. Co. 44
Warner Instrument Co. 71
Way Muffler Co. 42
Wayne Automobile Co. 83
Weber, O. F., Co. 84
Weed Chain Tire Grip Co. 79
Weiss, Mat 81
Welch Motor Car Co. 82
Western Oil Pump Co. 83
Western Tool Works 75
Weston Electrical Instrument Co. 80
Wheeler & Schebler 39
White Sewing Machine Co. 57
Whitlock Coil Pipe Co. 79
Whitney Mfg. Co. 81
Willard Storage Battery Co. 79
Willis, E. J., Co. 85
Winkley Co. 82
Winton Motor Carriage Co. 30
Witherbee Igniter Co. 83
Wolverine Automobile & Commercial Vehicle Co. 77
Worthington Automobile Co. 63

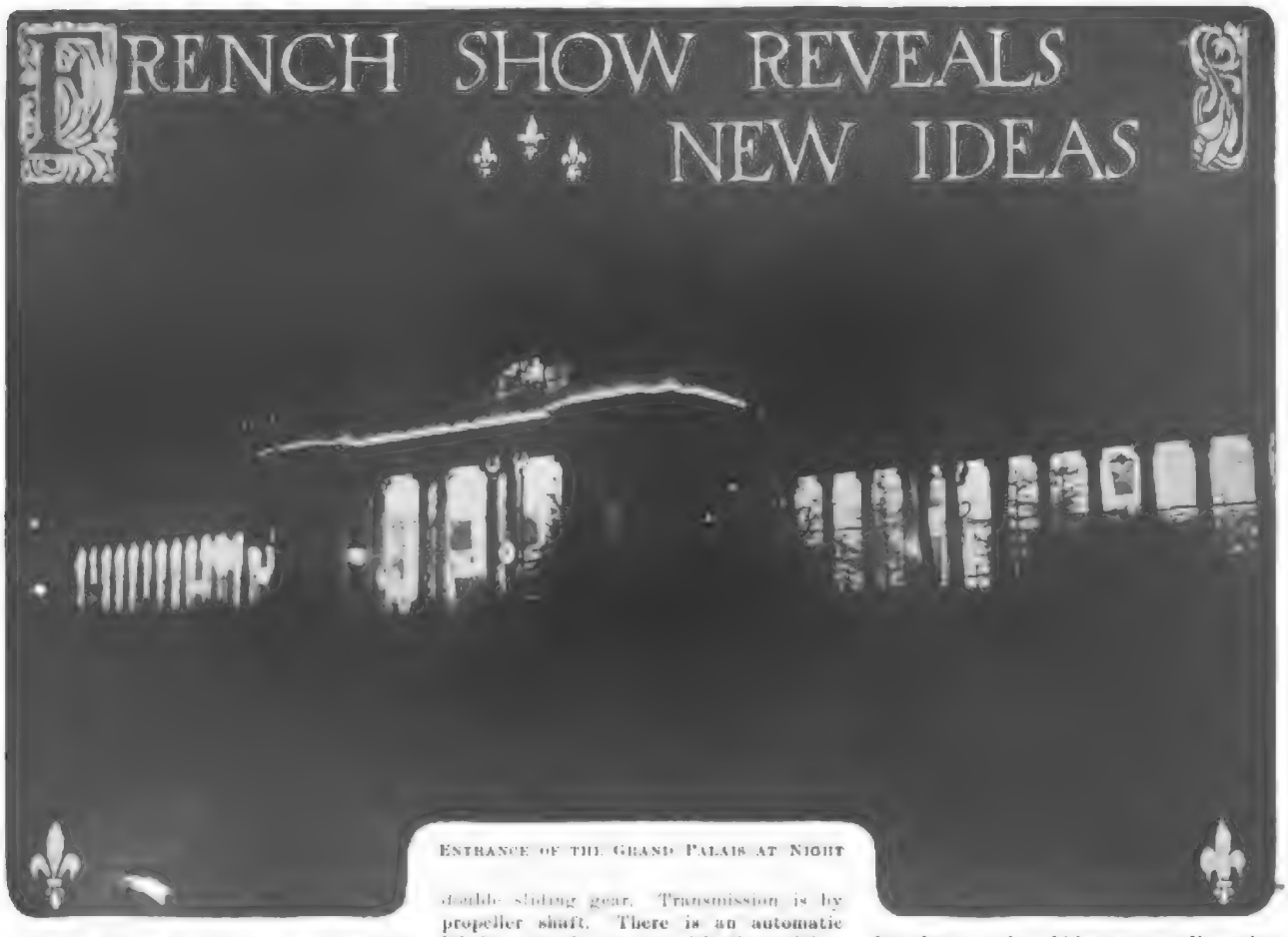
When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

MOTOR AGE

VOL. VIII NO. 26 CHICAGO, DECEMBER 28, 1905 $2.00 Per Year

FRENCH SHOW REVEALS NEW IDEAS



ENTRANCE OF THE GRAND PALAIS AT NIGHT

Paris, Dec. 13—Visits to the Paris show after the rush and crowds of the opening day reveal a great many changes in detail, but a general settling down in main lines of construction. Both users and designers now appear to know what is wanted, and there is a tendency towards uniformity of type. Small vehicles are especially numerous as compared with previous years, and French constructors after so long neglecting the runabout are now giving to it the closest attention. There are chassis sold as low as $395, and for this modest sum is furnished by the Prima company a chassis with pressed steel frame, single-cylinder vertical motor of 7-9 horsepower, running at 1,500 revolutions and having mechanically operated inlet and exhaust valves. There are three speeds and reverse by one lever, and a double sliding gear. Transmission is by propeller shaft. There is an automatic lubricator and a pump with direct drive. Dunlop or Hutchinson tires are fitted.

Sizaire & Naudin offer a runabout with single-cylinder motor, three speeds, with direct drive on the high, shaft drive, side frames all wood, and two-seated body in leather, for $590. The Elegant is sold for $385 with single-cylinder de Dion motor, three speeds and reverse, wooden wheels, big tires and a two-seated body. For $450 the same chassis with a 9-horsepower de Dion motor is supplied, and for $900 a 20-horsepower four-cylinder car can be obtained. These are but a few of the many small cars sold at similarly low prices by the French manufacturers.

The Panhard & Levassor firm exposes a 35-horsepower chassis, a 15-horsepower coupé with body by Rothschild, a 24-horsepower limousine with body work by Labourdette, and a 24-horsepower limousine by Berton Labourdette. The novelty in body work at this stand is the limousine cab, in which the driver is completely enclosed. The dash is heightened and curved inwards over the steering wheel, from which point is a glass front going up to the roof. Entrance to the fore compartment is by a door on the left hand side of the car opening from back to front, the two doors giving access to rear of car opening in the opposite direction. The 35-horsepower chassis is practically the same as the 50-horsepower shown last year. It has four separate cylinders, Eiseman magneto under the hood, gear-driven. Water circulation is by centrifugal pump, gear-driven. There is double sliding gear with direct drive on the high, without the intermediary shaft turning. The side

Digitized by Google

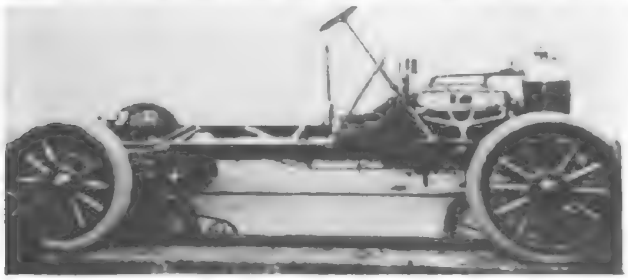
VIEW OF THE MAIN PORTION OF THE GRAND PALAIS DURING THE PARIS AUTOMOBILE SHOW

frames are in wood and steel, as on previous year's models. A new patented shock absorber is shown on the 35-horsepower Panhard. On the 15-horsepower chassis is a dynamo used for charging the accumulators employed for lighting the car. When a dynamo which has to be frequently run at a low speed, or even stopped altogether, is used for charging accumulators, it is essential to have some apparatus preventing the discharge of the accumulators as soon as the voltage of the current produced by the dynamo is insufficient. The chassis exposed is fitted with a disconnector automatically isolating the dynamo from the accumulators as soon as the state of the dynamo requires it. A patent for both home and abroad has been secured for this by the Panhard firm.

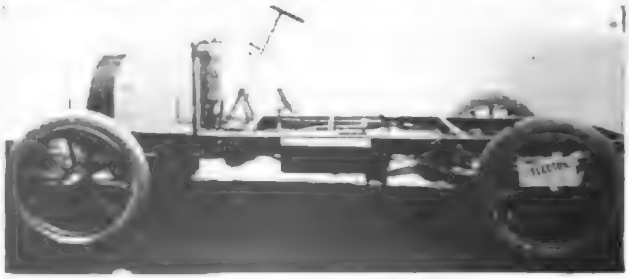
On the Charron, Girardot & Voigt stand the novelty is a chassis with steering mechanism on the left, and intended for town use. It is claimed that with the driver on the left hand side instead of on the right there is greater ease in negotiating town traffic than when he sits to the right. The suspension has been most carefully thought out, for in addition to the transverse rear spring there are longitudinal springs and C springs. The side frames are raised considerably at the rear, this chasis being intended to take a coupé or landaulet body. A 14-horsepower four-cylinder motor is carried under the usual form of C. G. V. bonnet, with radiator below the front of the chassis. Transmission is by cardan shaft; there are four speeds and reverse, with the high speed driving direct. Sparking is by Simms-Bosch magneto with small accumulator to facilitate the starting of the motor without leaving the seat. The other models for 1906 are 20, 30, 50 and 75 horsepower. Among the novelties in body work is a landaulet in which an extra seat has been gained by enclosing the front seat to the left of the driver in the rear of the car. Thus there are two rear seats and one corner seat inside and one corner seat outside for the driver. The circular seat inside has glass sides and front.

An American firm, the Dolores Co., operating in Paris, has also a town vehicle with driver's seat on the left, controlling levers in the center and steering wheel near the left-hand side. It is a 10-horsepower four-cylinder chassis, one of the lowest power four-cylinder automobiles in the show. The only other exhibit on this stand is a 40-horsepower chassis, the largest size made by this firm.

Renault has also brought out a 10-horsepower four-cylinder automobile for town use, the chief novelty the firm has produced this year. The old 10-horsepower two-cylinder model is replaced by an 8-horsepower two-cylinder car. The entire output for some time to come has already been bought up, and Renault is building few cars for the general public.

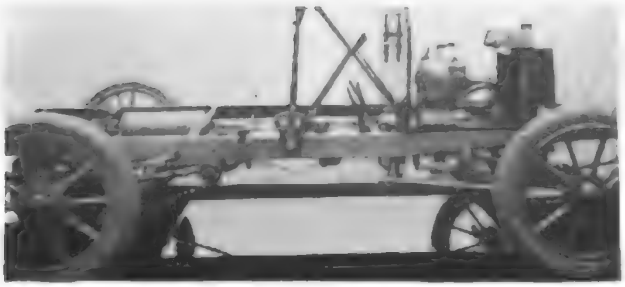


RICHARD-BRASIER 25-35 HORSEPOWER CHASSIS



BERTOLLET 20-25 HORSEPOWER CHASSIS

Digitized by Google



CHASSIS OF THE 1905 PEUGEOT

BERLIET 16-22 HORSEPOWER CHASSIS

At the Darracq stand, one of the most elegant in the show, Hémery's Vanderbilt cup racer is exposed and always has around it a big crowd of people. There is a 10-horsepower two-cylinder light car, sliding change speed gear giving three speeds ahead and reverse, with direct drive on the high, and internal expanding brakes on the differential and the rear wheels. Body work on the 10-horsepower car is a double phaeton with side entrance. The 8-horsepower model has a single cylinder and tonneau body with pivoting front seat. Changes have been made in the clutch, a number of spring studs piercing the outer face of the male cone and raising the leather slightly. By this means a progressive drive is obtained. Push forward pedals with a longer leverage have been adopted in place of the old push down pedals. There is a new system of automatic lubrication and there are now no joints in the water circulating system. Other models shown are 12, 15, 20 and 40 horsepower which excite great admiration.

De Dion & Bouton are showing 8, 15 and 24-horsepower models. Tube side frames are abolished in the 8-horsepower model in favor of pressed steel; there is a single-cylinder motor, three speeds and reverse and metal clutch. Tube side frames are only used on the 8-horsepower model. Greater changes are made on the 15-horsepower car, for the well-known type of de Dion bonnet has been replaced by a square hood permitting the use of a honeycomb radiator. The motor has four cylinders, pressed steel frame, sliding gear giving three speeds and reverse, and patent metallic clutch. The 24-horsepower car, shown with a limousine body, differs from the 15-horsepower car in having four forward speeds.

Mors models are 17, 28 and 45-horsepower. A new metallic clutch has been designed for the 17 and 28-horsepower models and flat push pedals, the same as those on the larger car, have been adopted on these two models. An exceedingly powerful compound brake is fitted to the 45-horsepower model. The most interesting feature of the stand is a self-starting apparatus. It consists of an air pump, a patent mixing chamber called a dynamogene, a decompression tap and another for the gas to each cylinder. In addition, the apparatus includes a small lever connected with the taps, and necessary piping uniting the pump, the dynamogene and the cylinders. To start the motor the small lever is drawn over to open the taps, and the pump is worked two or three times. Air is driven by the pump into the dynamogene, where the necessary mixture is obtained. The small lever is pushed back, and on sparking the motor starts instantaneously.

Léon Bollée shows 20 and 40-horsepower models in which minor changes have been made in brakes, oiling arrangements and the enclosure of working parts. A tire pump is shown on a 40-horsepower chassis, attached to the main shaft between the clutch and the gear box, and connected up or disconnected by sliding a sleeve

ONE OF THE MOTOR BUSES USED TO CARRY PEOPLE TO AND FROM THE PARIS AUTOMOBILE SHOW

Digitized by Google

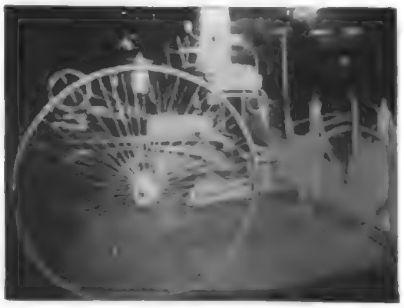
MAGNIFICENT BODY DESIGN ON THE 30-40 HORSEPOWER ARIES CAR

along the shaft. Some splendid body work by Kellner is also shown on the Léon Bollée stand, the finest specimen being an elegant limousine of an entirely new design, which will be shown at the New York exhibition.

The car which won the Bennett cup excites everybody's interest at the Richard-Brasier stand, as well as the trophy which was held for 2 years by the same firm. In the 1906 model the pistons are increased in length, giving a larger wearing surface, diminishing wear and reducing considerably the entrance of oil into the interior of the combustion chamber, and removing the wrist pins from its upper face where it is exposed to high temperatures. The inlet and exhaust valves are interchangeable and are placed on the same side of the cylinder. The leads from the exhaust are all united and are surrounded with water cooling in order to prevent deterioration of the valve. The camshafts are strengthened and are in one piece with the cams, thus preventing all differences arising from keying on and giving a more regular distribution. A special form has been given to the crankcase in order to diminish the splashing of oil on the cylinder sides. A self-starting apparatus is fixed on the 15 and 25-horsepower models by which the motor can be started from the driver's seat by the use of a lever on the side of the car.

Some changes have been made in the lubricator, and it is now possible to stop the flow of oil to the cylinders while passing through a town, and thus reduce or abolish entirely smoke from the exhaust. The clutch of the 40-horsepower model allows a greater amount of slipping when starting, but being rigid when running at high speed. This clutch was used on the 1904 and 1905 Bennett racers. The change speed gears are similar to those of 1905, with four speeds and reverse on the same lever and ball bearings throughout. In the 15-horsepower the transmission is by shaft but for the 25 and 40-horsepower models there is chain drive. There is an increased water circulation for all models, the 15 and 25-horsepower cars being by thermo-siphon, and the 40-horsepower cars by centrifugal pump. The radiator is of the Bennett type and there is a ventilator driven by a belt for the 15 and 25-horsepower models. All brakes have been made larger and more powerful.

Mercedes models are to be made in three sizes—35, 45 and 70 horsepower. The valve camshaft gearing is now of steel running in an oil bath and completely closed in an aluminum crank case. Lubrication is by merchanical pump with positive gear drive. Springs are longer and softer and both foot brakes are fitted with large butterfly adjustment screws. The coiled spring all-metal clutch is entirely enclosed and runs in an oil bath. The most important change is in the gear box and now there is direct drive on the high, while the three lower speeds are operated through but a single set of gear wheels, as on previous models. Features of the body work and fittings on a double phaeton touring car shown at the Mercedes stand are false floor boards folding over to make a sloping floor, side doors opening from back to front, side doors for the two front seats, a new trunk bracket in rear enclosed by a metal sheath following the form of the rear of car, and a swing lantern on the left side of front seats of the car.



A BENZ CAR OF 1889

DISPLAY OF THE BEESTON-HUMBER COMPANY

Hotchkiss cars are not changed much this year. Ball bearings, first introduced by this firm, are fitted throughout, even on the crankshaft. The 35-horsepower model has had its side-frames lowered 4 inches, weight has been saved on the live axle, at the same time increasing its strength. In the model shown there is a speed box with three sliding sleeves and a change speed lever without springs or ratchet, of such construction that the reverse motion cannot be put in accidentally. A heel pedal has to be depressed before the lever can be put into reverse position. It opens automatically to let the lever out, and then closes again.

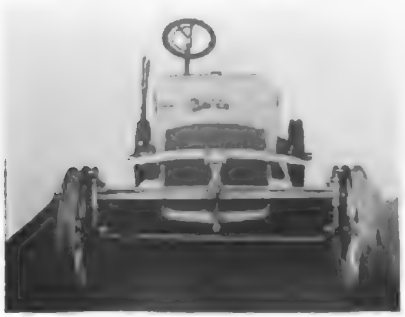
Neither Fiat nor Itala has made many changes on last year's models. The former firm shows a 12-16-horsepower chassis intended for a four-seated body for light use. This model, however, does not replace the existing 16-horsepower chassis. The two Italian firms have two of the finest stands in the whole show, both in a cen-

Digitized by Google

tral position and both gorgeously decorated. The Itala is now represented in Paris by Henri Fournier, formerly sole agent for the Oldsmobile.

In addition to the four American firms —Columbia, Cadillac, Oldsmobile and American Locomotive Co.—exposing automobiles at the Paris show, Rushmore lamps are exhibited by the newly appointed Paris representative, and in the industrial section there is a good show of machine tools by such well known American firms as Brown & Sharp Mfg. Co., Pratt & Whitney, Yale & Towne Mfg. Co., Cleveland Twist Drill Co., and American Emery Wheel Works.

In the Serpollet stand the 1906 models are absolutely new and differ much from preceding types brought out by this exponent of steam vehicles. The generator is in front, the motor in the center and the water reservoir in the rear, making the Serpollet design a perfect imitation of the gasoline machine as far as general disposition of the power plants is concerned. In next year's machines the generators used are very small and the motor a double type, with a pair of horizontal cylinders lying side by side in the center of the chassis frame. Many changes are made in detail around the generator, one



Sizaire & Naudin's Voiturette

of which is the introduction of a recuperator, by means of which the feed water to the generator is reheated by the escaping steam from the motor.

Two chassis and one complete machine are exhibited by the Ader company. One of them is a four-cylinder 16-20 horsepower, and the other, with the same style of motor, is rated at 20-24 horsepower. They both are noticeable by the strength shown in the frame work, and also in the interior mechanisms of the motor and also in the shafts and gears of the transmission set. The 16-20 horsepower chassis is intended only for city use, the concern having catered exclusively to this line for the past 18 months. Another portion of the exhibit is a limousine-bodied car mounted on the higher powered chassis. This body is commodious in the extreme, having accommodation for six in the rear and for one or two beside the driver on the exposed front seat.

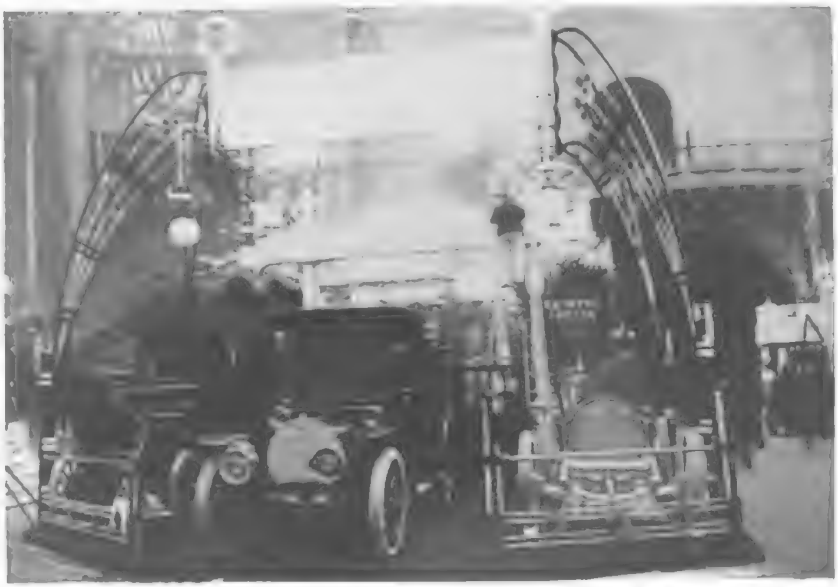
Pilain cars in three different chassis lines are shown—16-22, 20-30 and 24-35 horsepower—and a special model 40-60 horsepower. All of these models are similar in that they have four vertical cylinders. As for the 20-30 horsepower machine its construction is very strong and it is furnished with a special carbureter,

Big Exhibit of the Delahaye Cars

in which the air-controlled valve can be manipulated from the steering wheel when desired. Other points deserving of attention in this machine are the strength of the rear wheels, brakes, the use of an adjustable positive oiler and the adoption of transmissions giving either three or four forward speeds as desired by the buyer. In the 40-60 horsepower machine, the motor is unique and the gear set differs from others on exhibition in that it has three direct speeds ahead.

Four new Florentia models are exhibited on the concern's stand in the center of the hall. One is an 18-horsepower four-cylinder machine with magneto ignition, metal-to-metal clutch and final drive from the gear set to the back axle by cardan shaft. The gear set gives four speeds ahead, the top one being direct drive. Gasoline is fed to the carbureter by air compression, three brakes are used and the tires are large. A chassis similar to this uses final chain drive. The 24-horsepower chassis is of the four-cylinder type and has ignition by a low-tension magneto, with make-and-break devices within each cylinder. The clutch in this model is of the metal-face variety. It has four speeds ahead and all minor points about it are similar to those in the 18-horsepower machine. In the 50-horsepower machine low-tension magneto ignition is fitted. It has four forward speeds, metal clutch and chain drive.

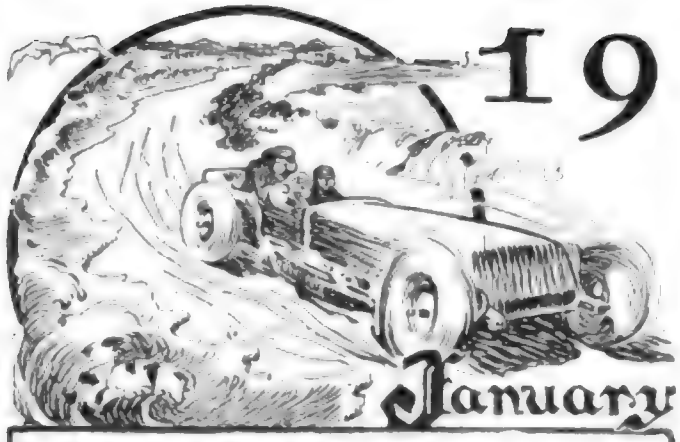
Two chassis are exhibited by the house of Bruhot, one a 12-horsepower machine with a three-forward speed transmission, another a 15-horsepower chassis and the third of 60 horsepower has a gear set with four forward speeds. All models are of the vertical four-cylinder variety. Cooling is by a positively-driven water pump. Magneto ignition is fitted, and the lubrication of the motor and motor bearings is by a mechanical oiler.



Hotchkiss & Co.'s Small But Impressive Display

Digitized by Google

1905



January

Automobile Club of France chooses Auvergne course for 1905 Bennett cup race.

A. A. A. racing board refuses to recognize Kiser's Cleveland mile of 52 4/5 seconds and Oldfield's Denver mile of 51 1/5 seconds.

New York show is held in Madison Square garden.

Association of Licensed Automobile Manufacturers secures Madison Square garden for show purposes.

Annual meet, held at Ormond, Fla., results in mile in 32 4/5 seconds by Bowden, kilometer in 20 3/5 seconds by Bowden, 50 miles in 38 minutes 51 seconds by Fletcher and 100 miles in 1 hour 18 minutes 24 seconds by Fletcher.

February

Automobile Club of France declines to separate Bennett and grand prix events.

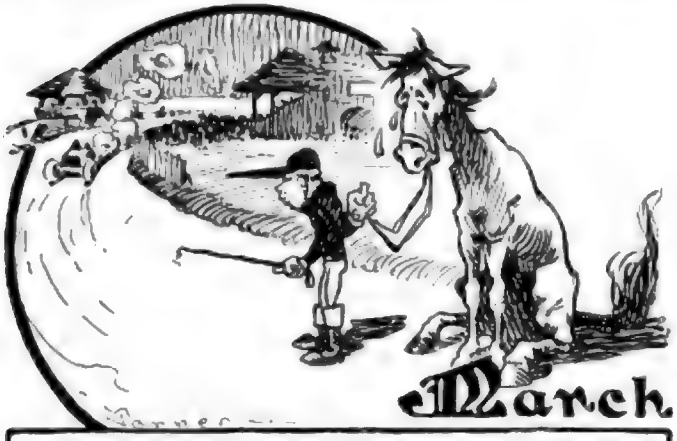
Chicago automobile show held in Coliseum, 100,000 people attending during week and $7,000,000 worth of goods sold.

Kaiser Wilhelm assists in opening of Germany's annual show in Berlin.

First road race run in Cuba won by E. Carricaburo, driving for E. J Comill.

World's standing start mile record cut to 45 seconds by H. W. Fletcher in 80-horsepower de Dietrich, at Havana, Cuba.

France decides to run Bennett and grand prix events separately.



March

American Motor Car Manufacturers' Association formed by makers not in A. L. A. M.

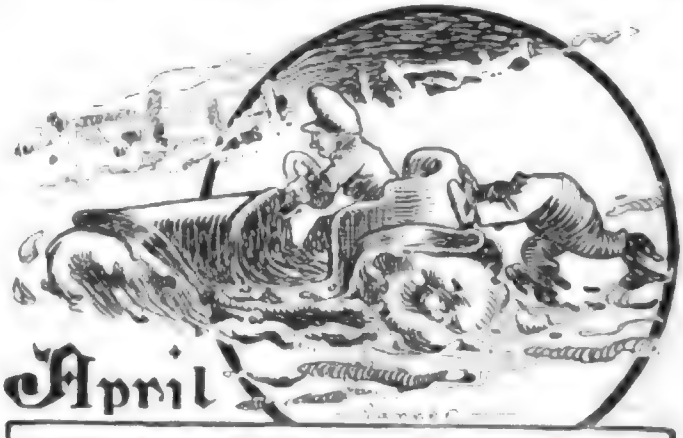
Independent makers decide to hold show next year and not leave field exclusively to A. L. A. M.

E. H. Cutler elected president of National Association of Automobile Manufacturers.

R. L. Morrell selected as chairman of A. A. A. racing board and A. G. Batchelder as secretary.

Morris Park, historic horse racecourse, given exclusively to motor car racing.

Automobile Club of America cuts into show game.



April

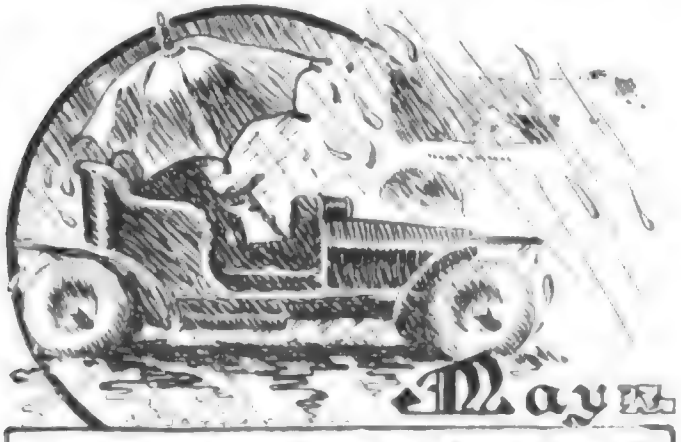
Labor system of road building condemned by Buffalo's good road convention, which favors $50,000,000 bonds for road building.

Date for Bennett cup race set for July 5, and French eliminating trial for June 16.

Racing board of American Automobile Association defines amateur and professional racing, and passes important racing regulations.

Australia's first endurance contest won by a 16-horsepower Argyll car.

Plattier, driving a 22 horsepower Berliet, wins French reliability test of Automobile Club of France, Marseilles capturing team race run in connection with it.



May

Grout steamer makes fastest time of day in Springfield, Mass., hill climb.

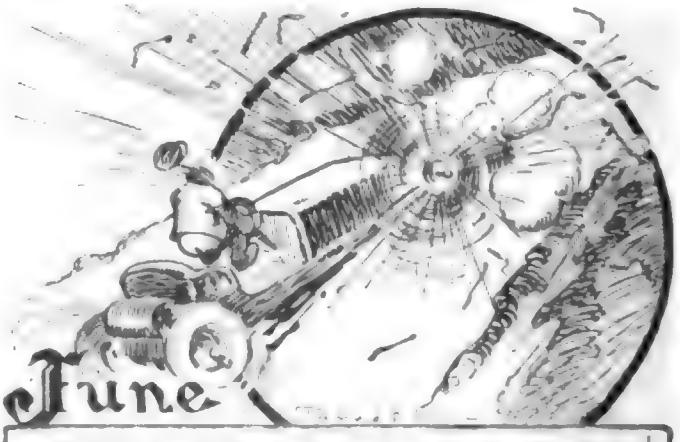
Second annual parade of Automobile Club of America in New York run over muddy streets, 130 cars taking part.

Wridgway, in a 24-h.p. Peerless, lowers 1,000 mile non-stop record to 25 hours 50 minutes 1 second.

Dwight Huss and Percy Megargel start on Oldsmobile transcontinental trip.

Thirteen nominations made by America for Vanderbilt cup race.

Louis Chevrolet cuts mile track record to 52 4/5 seconds at Morris Park.



June

Webb Jay's defeat of Barney Oldfield and Louis Chevrolet a feature of Chicago's 3-day meet.

Guy Vaughn, in Decatville, breaks Wridgway's non-stop and 24-hour records at Empire City track.

Mercedes car makes best time climbing Dead Horse hill, Worcester, Mass., and Grout steamer beats all other American cars.

Earp, Napier, and Bianchi and Rolls, Wolseley, selected as British representatives in Bennett cup race, with Hargreaves and Cecil Edge, Napiers, as alternates.

Thery, Richard-Brazier, Caillois, Richard-Brasier and Duray, de Dietrich, make French team for Bennett cup race.

Digitized by Google

July

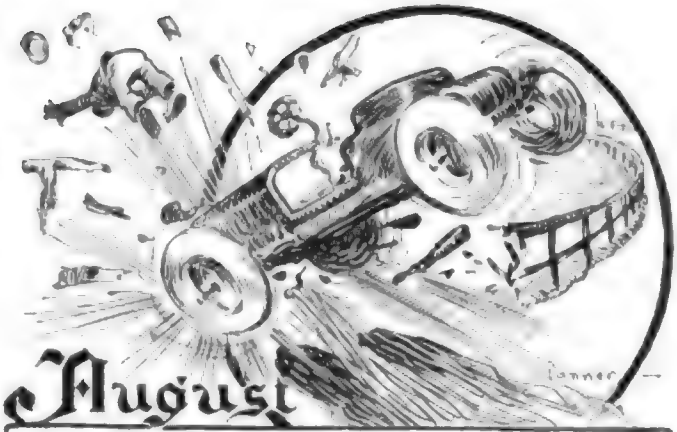
Leon Thery, France, wins Bennett cup for second time, covering 340¾ miles in 7 hours 2 minutes 25 seconds. Nazzaro, Italy, second; Cagno, Italy, third; Caillois, France, fourth. Lytle only American to finish.

Tour from Chicago to St. Paul comes off, roads being muddy and weather rainy.

Webb Jay, in White steamer, does flying mile at Morris Park in 48 4/5 seconds.

W. H. Hilliard, in a Napier, is hero of Mount Washington hill climb, reducing record to 20 minutes 58 2/5 seconds.

Glidden tour trophy is won by Percy P. Pierce, in Pierce Great Arrow.



August

Barney Oldfield injured in accident at Detroit, caused by smashing into fence during 5-mile race; injuries not serious.

Hemery, in a Darracq, wins 696-kilometer race over Ardennes circuit, in 5 hours 58 minutes 32 1-5 seconds.

Earl Kiser meets with serious accident at Cleveland, injuring left leg so amputation is necessary.

Webb Jay receives almost fatal injuries in race at Buffalo.

Official awards in Herkomer tour in Germany give trophy to E. Ladenburg, of Munich, in a Mercedes, fitted with Continental tires.

Track racing practically abandoned because of accidents to Jay, Kiser and Oldfield.

September

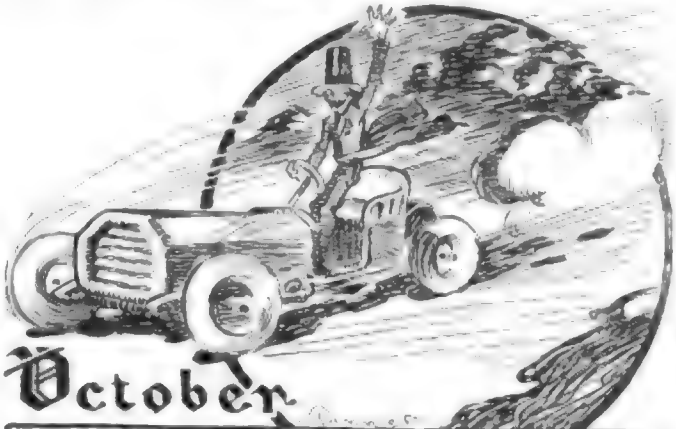
Pope-Toledo, Locomobile, Tourist, Haynes and Thomas cars finish in order named in American eliminating Vanderbilt cup trial, but commission rejects third, fourth and fifth cars, substituting White, Christie and 1.5 tie Pope-Toledo; Dingley drives winning machine, averaging 56.2 miles per hour.

Tourists' trophy race, England's big automobile contest, is won by Arrol-Johnston car, fitted with Continental tires.

Sorel, in a De Dietrich car, winner of Pyrenees cup tour in France.

Raggio, driving an Itala, captures race for Florio trophy in Italy; twenty-one cars start.

Burrelle tire trophy commission awards cup to the Continental tire.



October

France lifts Vanderbilt cup, with America second, Italy third and Germany nowhere; Hemery is winning driver, Heath being runner up; accident robs Lancia of almost certain victory. Hemery's time, 4 hours 30 minutes 8 seconds.

Clifford-Earp, in English Napier, wins Chateau Thierry hill climb in France, average speed being 38 miles an hour; he also captures honors at Dourdan meeting.

James Gordon Bennett denies story he has given his cup to Italy for touring competition.

Braun scores his third consecutive victory in Semmering hill climb in Austria.

November

English shows are held, Olympia at Olympia hall and Stanley at Agricultural hall; French makers well represented.

Reo omnibus wins economy test of New York Motor Club, with Reo runabout second.

Glidden tour committee decides to start next year's run from Buffalo, route going through Canada and White mountains and ending in New York city.

Coliseum show in Chicago so big Manager Miles is forced to secure First Regiment armory as annex.

Records broken by National car, Clemens and Merz smashing Vaughn's marks from 650 to 1,000 miles as well as 24-hour record.

December

Largest automobile show on record held in Paris.

Vandals strew nails on course on last day of French runabout test, making it impossible to immediately pick winner.

Pyrenees cup is stolen from de Dietrich exhibit on last day of Olympia show; no trace of it to be had.

Congressman Morrell, of Pennsylvania, introduces bill into house of representatives which seeks to compel tourists to take out federal licenses.

Independents' tire company, the Ajax Standard Rubber Co., organized, the plant to be at foot of East One Hundred and Sixth street, New York; Horace de Lisser, organizer.

Digitized by Google

MOTOR AGE

309 Michigan avenue, Chicago

Published every Thursday by the Trade Press Company
N. H. Van Sicklen Manager - Chas. P. Root Editor
Subscription two dollars a year
Foreign subscription four dollars
The Western News Company of Chicago and its Branches supply newsdealers
New York office 29 West Forty-second street
Official Organ of the American Motor League
Entered at the Chicago Postoffice as second class matter

THE HORSE AND THE AUTOMOBILE

THIS is a story about the most dangerous animal in the world—a creature which annually kills and maims more human beings than are slain or injured by any other beast. * * *

Yet, of all accidents to human beings, fatal or disabling, including mischances of every kind and description, not less than twelve per cent are caused, directly or indirectly, by this fear-inspiring creature. Just think of it—twelve out of every hundred mishaps involving physical injury more or less serious! These are official accident-insurance figures. * * *

Assuming that horses cause twelve per cent of them, it appears that these animals are accountable, directly or indirectly, for about 780,000, or say three-quarters of a million, more or less serious mishaps in the United States every year. If these mischances result fatally in only 1 per cent of all cases, the number of deaths annually in this country, attributable to horses, cannot be far from 8,000.

The chief cause of horse accidents, however, lies in the fact that this noble animal—beautiful, docile, affectionate; man's faithful friend and patient servant—is born a fool, and never gets over it. Its intelligence is overestimated. * * *

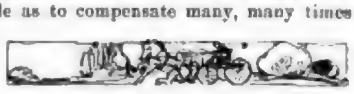
One of the accident-insurance companies recently published a statement, based upon its own returns, which showed that out of a hundred average accidents caused by the horse, the railroad, the automobile and the bicycle, eighty-two are attributable to the equine brute, nine to the railroad, five to the motor car, and four to the silent wheel. One reason why physicians are rated as bad risks is that they use horses so much for driving about—an idea the justice of which is indicated by the fact that, out of 972 accidents to doctors recorded by another concern, 267, or considerably more than one-fourth, were due to horses. * * *

Next in the scale of hazard after the ice wagon comes the express wagon. * * *

The only vehicle rated as more dangerous than the ice wagon is the newspaper delivery wagon, which is considered such a hazardous risk that most of the companies regard it as practically non-insurable. * * * Fast horses are used, and the driving is utterly regardless of the lives and limbs of pedestrians. * * *

A discussion of dangers attributable to horses would be incomplete without some reference to the fact that they are responsible for the existence of the multitudes of house-flies which, apart from the discomfort they cause in summer, are known to be carriers of disease germs. Every stable in warm weather is a fly factory, in active operation night and day. * * *

Meanwhile let us acknowledge that the horse, after all, is the most useful of all animals to man, bar none, and that if, owing to its timidity and lack of cleverness, it is a cause of many serious and not a few fatal accidents, the services it renders to the human race are so extremely valuable as to compensate many, many times over for all the mischief it commits.—René Bache in Saturday Evening Post.



THIS is a story about a machine that is not gifted with brains, but which is accused of more deviltry than any known animate or inanimate thing—chiefly because it is something comparatively new.

The automobile has been responsible for some deaths—but the majority of its victims have been the drivers of the automobile itself. And even admitting all this, it is shown elsewhere that the percentage of accidents caused by the automobile is less than half the percentage of deaths caused by the horse.

While the horse is held responsible for 8,000 deaths each year, it would be a difficult task for the most clever statistician to compile a table showing that automobiles have been responsible for more than a hundred deaths in a year—and this in every country on the entire globe.

The automobile is not born a fool, but it is sometimes placed in the hands of a fool. But horses are also placed in the hands of fools, and the fool driving and the fool being driven make a dangerous combination.

Eighty-two per cent of accidents attributable to the horse! Five per cent of the accidents attributable to the automobile!! Here the estimates of the motorphobists are sadly shattered, and the need of legislation to govern the users of horse-drawn vehicles becomes apparent. On this basis what chance in a lifetime has a man to be injured by a motor car? The motor car will not run away if left alone; it is the most harmless thing on earth then. And even when it is being operated it is usually in the hands of more competent people than are horses, which are frequently driven by small boys and girls.

René Bache has forgotten the deadly trolley car—everybody knows its record for death and destruction.

The paragraph opposite is a deathblow to the motorphobist press. While the enterprising press is making every endeavor to rush its papers through a city's streets, mindful of the life of no person, it is at the same time doing stunts in journalism to show how dangerous to life and limb is the motor car.

Automobiles are not responsible for flies; they do not make barnyards of the streets; they do not breed disease, and they are not taken to rendering establishments to be ground into something for man to use. But the day has come when a city's streets are no place for the poor horse, where it may tear itself to pieces stumbling over slippery and stone-faced pavements. The horse is too nice a brute to be subjected to such abuse. It ought not to be a part of a city's life.

The horse IS useful and it has its place. Furthermore, the horse has been done an injustice to some extent in that it has been classed as brainless. As a matter of fact, but for the horse sense that exists in the horse and the brains that do not exist in many drivers—and drivers as a rule are not over intelligent—there would be more accidents caused by the horses than there are at the present time.

Digitized by Google

The good roads fever is again epidemic, and in some places even the rural districts have been attacked.

While some automobile makers will proudly turn over new leaves, others may feel justified in turning back a few leaves.

Fitzsimmons might break into the automobile game and procure a job as chauffeur—he's still good enough to wallop road hogs once in a while.

It doesn't take a wooden Indian to discover that four-cylinder automobiles are becoming quite the thing in this country, and that other types are gradually becoming extinct.

The purchaser of a French automobile probably wonders how much of his good coin went to fitting up the Paris salon and the magnificent decorations around the stands of most of the manufacturers. No wonder foreign automobiles come high.

About the time France heard of the evident success of the 1906 Florida beach tournament—with the possibility of a few records being broken—it reconsidered its determination not to hold a big race, and is now after all the advertising it can give its makers.

Now the American Automobile Association is stirred up because its own representatives at the Paris conference did not know under whose auspices the Vanderbilt cup race was run. It might be suggested that this is the penalty for naming dummies to serve as representatives.

Getting lost in a snow storm, having one's car frozen to the ground, staying out on a prairie all night and going without food for 36 hours is a part of motoring experience which few desire, but which transcontinental tourists seem compelled to take. While not at all pleasant at the time, it makes good story-telling material, if that is any consolation.

One Frank Mudd, of Chicago, has taken pains to orate and to glory in paying a fine for exceeding the speed limits, because he has at other times received the full value of the money paid out in doing a little scorching when the police were not in sight. It is bad enough to break laws without boasting of it, but to say a judge is misguided and narrow minded is, at least, discourteous. There is some consolation in the fact that Mudd represents no automobilists other than himself and that few automobilists in any manner coincide with him in his rantings or intend following his lead.

The fantastic headgears seen at the Paris automobile salon suggests that even the French women have automobiles on the brain. Let it be hoped no such affliction shall befall this country.

Congratulations are extended to the two Chicago automobile dealers who have waxed hot for a week or so over the proposition of the speed of the car handled by one of the dealers. It requires some fine scheming to work a metropolitan daily paper for priceless reading matter.

The Week

Charges of mismanagement of Vanderbilt race, made at international conference in Paris, stir up Americans.

Prospective entry list for Ormond-Daytona meet shows most of the stars of the world in the competition.

At least ten entries expected for the Cuban road race; Americans in Havana subscribe to fund to run race.

Court of common pleas refuses request of Automobile Club of Philadelphia to enjoin city from enforcing tag law after first of year.

Unconstitutional action of Minnesota legislature may knock out the new highway commission in gopher state.

Philadelphia dealers decide to get together and fight the grafting chauffeurs.

Rules of Tourist trophy race altered so steamers get in on special fuel allowance, equivalent to about 16 miles per gallon.

In big French road race next year drivers will have to repair own tires and mend breaks in machine, no outside help being allowed; tire race sidetracked by grand prix, which will probably be held over Fontainebleau course.

Observations from Paris automobile show.

The English makers didn't seem to think much of the Paris show—which probably is a little in the line of retaliation.

English motorists have an opportunity to demonstrate to the politicians of their country that in union there's strength.

All this hub-bub about Florida and all the silence on Senator Morgan's part would indicate that the meet and not the senator is being advertised.

Although he doesn't know it, the automobile is the horse's best friend; it is the automobile that is to take the noble brute out of bondage and do away with humane societies.

What's the matter with the A. L. A. M., the N. A. A. M., and all the other alphabetical associations getting together and erecting a building on a 40-acre tract to be used for the annual automobile show?

With due consideration and respect for our own greatness and our own ability to hustle, we'll have to go some to even approach Paris in the matter of grandeur as far as automobile shows are concerned.

The American automobile community is pouring out its thanks to the good, kind weather man for the quality of winter he has been dealing out; but the probabilities are he will receive his full share of cussing before another month shall have passed.

As usual, a few slow ones have just heard that automobile shows are to be held in New York and Chicago in January and February, and are clamoring for space. What would these particular makers do if the shows were to be held in November or December?

As if automobilists didn't have enough in the trouble line, they have the grafting chauffeur with which to contend. He has been making his presence felt in every city in the union, and the fact that he is to have his fingers burned by the Philadelphia Automobile Trade Association will be welcome news to the automobile fraternity.

It's nice of Chicago's exponent of motorphobia, the Tribune, to devote a fifth of a column of space to half a dozen accidents—three of which were caused by railroad trains or trolley cars and were fatal—and cover the same with a flare head telling of an automobile accident whereby the automobile merely knocked a man down, and the victim admitted the automobile was in no manner to blame. This is enterprise

Digitized by Google

BIG TEMPEST IN RACING TEAPOT

Criticisms of Foreigners Over Conduct of Last Vanderbilt Event Stirs Up Storm in New York—American Officials Reply to Assertions, Showing Germans Were Not Posted

New York, Dec. 23—Mingled indignation at the charges and amusement at the utter ignorance of the true conditions not only by the foreigners, but by the delegates representing the Automobile Club of America have followed a cabled story of a discussion that occurred during the progress of the recent conference of clubs belonging to the international union. The story of the discussion alleged to have taken place at the meeting is quoted as follows:

"Count Sierstorpff, representing the German Automobile Club, said he wished to draw the attention of the meeting to some irregularities in connection with the Vanderbilt cup race. Germany had entered five machines for the contest and the German club was anxious to have a representative on the Vanderbilt cup commission to look after the German interests. He wrote to the American club on the matter, but the only reply he received was a list of members and the intimation 'this is the committee.' He wrote again, giving his reasons for desiring German representation, but he received no answer. He also wished to remark that the committee refused two of the machines entered by Germany and nominated two other German machines without consulting the German club in the matter.

"In reply Howard Johnstone and W. S. Hogan, as representing the American club, said they had heard nothing about the matter up to then, but promised to bring the matter before the governors of the American club at once.

"Baron de Zuylen then set the whole committee laughing by remarking that though France had won the Vanderbilt cup twice, the French club never had been able to get hold of the trophy, though repeated demands had been made. He thought this rather hard on the French automobile club.

"De Knyff caused some sensation by saying he had reason to believe some very irregular proceedings had taken place in connection with the Vanderbilt cup race itself. He had heard the weighing-in went on until midnight when all the officials had gone away, and that the third machine to be placed in the race was using a Krebs carbureter, which, of course, was of French construction. Messrs. Johnstone and Hogan simply replied that they were unaware of the facts and that they would at once report the matter to the American club."

The real incidents and circumstances are familiar to all followers of racing, and, very largely, to the general public in this country, every detail of the conditions, preliminaries and conduct of the race having been repeatedly printed in the stories previous to, and following the race. They are comprehensively covered by the replies of Chairman Morrell, of the racing board; Secretary Butler, of the A. C. A., and E. T. Birdsall, of the American Automobile Association technical committee.

"In the first place," said Mr. Morrell, "the deed of gift prevented the adding of a German representative to the commission. In the second place, no entries of German cars were declined. The entries of the machines of Baron de Caters and the late Mr. Dinsmore were withdrawn.

"A date had been set for the designation of drivers and particulars of machines and up to that time it was possible to make changes in entries. The de Caters nomination was withdrawn before that time and the Mercedes car of S. B. Stevens, of Rome, N. Y., was substituted by the commission in the belief that the entry would be acceptable to the German club. As a matter of fact a cablegram confirming the entry was received by the secretary of the Automobile Club of America on the day following.

"Upon the withdrawal of Mr. Dinsmore's car H. L. Bowden, of Boston, offered to substitute his Mercedes racer, but as that was subsequent to the date set for the designations of drivers the offer was declined. As to the whereabouts of the cup, I was under the impression that it was in the possession of the French club.

"The charge that weighing-in was done without the presence of officials is untrue. Because of the delay incurred in the substitution of new cylinders the Locomobile racer was taken to the scales at half-past 10 o'clock on the night before the race. E. T. Birdsall, technical member of the commission, in charge of the weighing, was present at the time. I would have held the scales open for any of the cup cars, foreign or American, all night if it had been necessary.

"The charge that a French carbureter was used on the Locomobile is equally groundless. I examined the Locomobile racer thoroughly and its carbureter was a duplicate of the one used on my own Locomobile touring car, and which I know to have been made in Bridgeport, Conn.

"It is regrettable that these charges have been made without a knowledge of the facts. It is the first unpleasant incident in connection with the most successful automobile race ever held in this country."

"Concerning the correspondence with the German club," said Secretary Butler, "our club simply acted as an intermediary for the American Automobile Association. We sent a list of the Vanderbilt cup commission to the German club, and apparently that was what Count Sierstorpff had reference to when he said he received a club membership list by way of answer to his demand for German representation on the committee.

"It is unjust to hold the automobile club accountable for something over which it has no control. The deed of gift from W. K. Vanderbilt, Jr., places the cup in the custody of the American Automobile Association, and designates a commission to take over active control of the race. This commission consists of the racing board of the American Automobile Association, the chairman of the sports committee of the Automobile Club of France and the donor of the trophy, Mr. Vanderbilt. Under such deed it would be impossible to place a representative of the German club or of any other foreign club on the committee.

"With the answer of our club to the German club's inquiry was mailed a copy of the deed of gift. The correspondence was then turned over to the Vanderbilt cup commission. As to the Vanderbilt cup, I believe it was placed in a vault at Tiffany's to await orders from the French club. If that organization has not possession, it probably is due to another misunderstanding. As a member of the commission I know that no German entry was declined, nor was any entry filled in the German team without the consent of the Automobile Club of Germany."

E. T. Birdsall, technical member of the commission in charge of the weighing-in of the cup cars, emphatically denied that any of the machines had been weighed without the presence of the officials as had been intimated by Rene de Knyff, of the French club. He also denied that the American Locomobile racer was equipped with a French carbureter.

"I was present at the weighing of every cup car," said Mr. Birdsall, "and I personally made a minute inspection of every machine that competed in the race. The Locomobile, owing to the delay in substituting new cylinders, was not weighed until 1:30 o'clock on the morning of the race.

"There were present at the time A. L. Riker, of the cup commission; S. A. Miles, representing the manufacturers' association, and several other race officials. We had gone on the scales at 10:30 o'clock at night expecting the car to be ready then, but we waited until it was actually in readiness to compete before we placed it on the scales.

"The statement that a Krebs carbureter was used on the Locomobile is not borne out by the facts. The carbureter used was of the regular stock type used on all Locomobile machines, and manufactured at Bridgeport, Conn. There is actually no doubt of this, as I personally examined the carbureter, as I did all other parts of the machine."

The evident ignorance of the foreigners participating in the discussion of racing conditions here is evidenced by their confusion of the Automobile Club of America and the American Automobile Association. That Howard Johnstone and W. H. Hogan confessing to practically no knowledge whatever of the circumstances connected with the winning of the Vanderbilt cup, should have been named by the A. C. A. as quasi representatives of the United States in an international conference having to do with racing is, to say the least, amazing. Mr. Johnstone, the club's foreign representative, has been fully informed of the correct facts of the case by mail and has been requested to present them to the German and French clubs.

"If any of the foreign clubs which competed in the Vanderbilt race," said President Morris of the A. C. A., "had

Digitized by Google

any complaint to make as to its conduct by the American Automobile Association such complaint should naturally have been made at the time of the race and in accordance with the rules. It hardly seems fair or sportsmanlike to make such complaints at this late date, more than 2 months after the race has been run."

For awhile the New York motoring world was agog with excitement, but when it was discovered the criticisms were made through ignorance of the situation everyone calmed down.

ABOUT NEW YORK ARMORY

New York, Dec. 25—The new armory of the Sixty-ninth Regiment, where the A. C. A. show will be held, is an immense assembly hall, altogether without an architectural parallel, its design and construction being marked throughout by departures from established practice, departures necessitated chiefly by the several requirements of large and unobstructed floor space, ample light, and complete fireproofness. To these ends the main portion o. the edifice consists of an enormous drill hall with floor space 189 by 202 feet, housed under a gigantic curbed covering, which is sustained by six semi-circular steel arches. The height from the floor measures under the arches 100 feet. An ample basement extends under the entire building, except under the unexcavated middle portion of the floor of the main hall, under which there is no basement, except around the edges. Around the edges of the main floor, at a sufficient height above it, and with no supporting pillars to obstruct the floor, there is an ample gallery for the accommodation of visitors. For the purposes of the automobile show, this gallery, which nominally is only 16 feet wide and is terraced by rows of seats, is being widened to 18 feet and floored over with level planking. The main floor likewise is being planked over with hardwood. The total floor space available for the automobile show is 152,500 square feet, an amount exceeded by but a few buildings in the world. The outside dimensions of the building are 197 feet wide on Lexington avenue, 305 feet deep on Twenty-sixth street, and 335 feet deep on Twenty-fifth street, running back to within 100 feet of Fourth avenue. The height is 116 feet. Construction was commenced on December 21, 1903.

HEMERY'S RACING CAR

New York, Dec. 25—"I heard not overmuch racing talk and no discussion whatever of the future of the Vanderbilt cup," said a tradesman just back from Paris. "Over there makers seem to think they have learned all that is possible from racing, and believe that if it be continued it will be merely as a sport. I saw Joe Tracy. He was making notes of all the cars, but said nothing to em about being commissioned to buy a racer. The only racer I heard spoken of as a candidate for Ormond honors was the Darracq. I was told that two engines of the type and power used in Hemery's car, which, I am sure, are over 80 horsepower, were to be coupled. I was also informed that the rules as to brakes, reverse and differential were to be complied with in building it."

MANY ON ORMOND LIST

Probabilities Show Morgan Will Have Cream of Racing Talent at His Meet in Florida

New York, Dec. 25—With all this talk of the Ormond-Daytona meet Senator Morgan says intending nominators do not want to forget that the entries will close positively on January 8, with him at his office, 116 Nassau street, in this city.

"I do not propose," says he, "to give out the entries piecemeal, as they come in, but will reserve the announcement of the nominations until after the final closing of the entries."

At the present writing it would seem that the entry of the following were assured: Alfred G. Vanderbilt, 200-horsepower Special, Sartori driver; G. W. Young, 110-horsepower Fiat, H. W. Fletcher driver; Hol-Tan Co., 110-horsepower Fiat, Lancia driver, and 90-horsepower Fiat, Cedrino driver; F. A. LaRoche Co., 180-horsepower Darracq, probably Hemery driver; Charles Schroeder, 80-horsepower Darracq, driver not named; Foxhall P. Keene, 120-horsepower Mercedes, Keene driver; American Napier Co., 120-horsepower Napier, Clifford Earp driver; Dr. H. E. Thomas, 90-horsepower Locomobile, owner driver; Walter Christie, 100-horsepower Christie, owner driver; Renault Brothers Agency, 90-horsepower Renault, Bernin driver; Ford Motor Co., 105-horsepower Ford, Henry Ford and Frank Kulick drivers; C. A. Coey, 90-horsepower Thomas, Coey driver; R. M. Palmer, 50-horsepower Matheson, Palmer and W. H. Owen drivers; Oscar Lear Automobile Co., 50-horsepower Frayer-Miller, Lee Frayer driver; Wayne Automobile Co., 50-horsepower heavyweight and 40-horsepower middleweight Wayne, Holmes driver; White Sewing Machine Co., White steamer, Walter White driver; Louis Ross, Stanley steamer, Ross driver; R. E. Olds, 30-horsepower Reo middleweight, Dan Wurgis driver, and National Motor Car Co., 60-horsepower National, Carl Fisher and Jap Clemons drivers.

Andre Massenot, of the Panhard & Levassor American branch, is expected back tomorrow from an inspection of the Florida and Cuban courses. That they will pass muster goes without saying. The outcome, it is believed, will be the entry of George Heath and a Panhard at both Ormond and Havana.

E. J. Conell, president of the Cuban Racing Association, who sailed for Havana on Saturday, stated he had assurances which led him to believe there would be at least ten crack cars and drivers to enter for the cup contest. As was told in MOTOR AGE last week, the start in the big race on February 11 will be from Camp Columbia, the headquarters of the American army during the occupation. It is proposed to convert the buildings into a training camp with garage, repair and sleeping accommodations. The American Club of Havana is taking great interest in the coming carnival, and subscriptions to its fund have reached $3,000. The Westrumite Co., of Chicago, has made a bid to oil the 57 miles of course for the $5,000 appropriated by the municipal council for the purpose. W. J. Morgan, manager of the carnival, was to have sent out the entry blanks on Saturday, together with those for the Palm Beach motor boat regatta, for which he says he has already received assurances of the participation of five fast boats.

The Fiat team will be the first on the Ormond-Daytona beach. Tomorrow Harry W. Fletcher, with George W. Young's 110-horsepower Fiat, which Lancia drove in the Vanderbilt race, and Emanuel Cedrino, with its mate, which was piloted by Nazaro, start for Florida. Their idea is to experiment with various sprockets and study atmospheric conditions.

RIKER ON FRENCH SHOW

Bridgeport, Conn., Dec. 20—A peripatetic MOTOR AGE man had the good luck to be at the Locomobile factory to-day on the arrival home from the Paris show of A. L. Riker, a pioneer American designer, whose recent triumph in the Vanderbilt race is still fresh in the minds of motorists. That the golden opportunity for an interview on the European 1906 output was seized goes without saying.

"The 1906 models," said Mr. Riker, "show practically no changes. The European makers seem at last to have arrived at a final type. The changes are merely in refinements and details. While propeller shaft drive is employed on the small cars, not one in forty of the big cars has other than double chain drive. Make-and-break spark and magneto ignition are now universal in the big cars. The popular powers are 24 for the low-powered and 40 for the high-powered cars. You must remember, however, that, owing to the tax per horsepower no higher powers are being brought out there. A 24 means 30-35 and a 40 will reach 50-55. The Mercedes is 45-horsepower. No higher powers are being built except for racing purposes. All cars above this are reckoned as mere freaks.

"I was disappointed in seeing so few radical changes. The bodies are smaller than last year and have fairly low backs. The king of the Belgians type has been utterly abandoned. Perhaps because of its being winter, the show cars were mainly of the limousine type, though closed cars with adjustable windows are the prevailing touring type in Europe. We have the European makers skinned to death in body building, both as to finish and workmanship.

"The makers with whom I talked confessed that the days of the European car as a big factor in American trade and sport were numbered."

OF COMMERCIAL INTEREST

London, Dec. 15—A point of considerable interest to British motorists, especially to the trade, has arisen out Bristol way, where a road carrying company, employing steam motor tractor, has been asked to pay more taxes by the Local Road Authority for "extraordinary traffic damage" alleged to have been caused by the company's motor tractors. As this case, if decided against the motor carrying company, would constitute a precedent for a number of similar claims all over the country, the Society of Motor Manufacturers and Motor Union have decided to stand behind the concern.

Digitized by

AGAIN ON THE TRAIL

Megargel Makes Light of His Experience at Flagstaff and Tells of the Adventure

Flagstaff, Ariz., Dec. 19—When we pulled out of Williams in the Reo Mountaineer we fully expected to make Flagstaff by midnight of the same day, having purposely delayed the start until the ground froze, as the mud made going almost impossible. After 4 miles on the low speed we decided to camp out for a few hours and wait for the ground to freeze. This we did, building a bonfire and lying wrapped in our blankets until midnight. Then the car was frozen fast to the ground, and we had to use an axe to chop it loose. Everything went well until we came to the big swamp, and here we became confused in the darkness and ran into a bog, miring the car to the body. We planted post after post to which to attach our cable, but each one pulled out, and it was daylight before we were free and ready to go.

After partaking of a cup of coffee and baked beans, we proceeded eastward, making the best of the hard running through the woods and snow. Soon it became necessary to shovel a road, as the snow was over 2 feet deep and held us fast. I think we did not make 4 miles all day Sunday, and we were traveling a road that had not been broken since the big snow storm of several weeks ago. We hadn't seen a human being since leaving Williams, and our provisions gave out. We had not considered it necessary to lay in much of a stock for the 34-mile run, which we expected to make in a couple of hours. We had gone hungry before, but the cold was intense, and all day Monday it snowed and blew until we couldn't see a half dozen yards before us. Then our gasoline gave out and we were right in the midst of the biggest drift yet found on the trip.

After a consultation we decided to make for the railroad track by compass and follow that to the nearest telegraph station. This we did, reaching Bellemont, 14 miles below Flagstaff, just as a relief party, coming to our assistance, came in sight. We wired Williams for gasoline, accepted the food brought us and, refusing to be towed into town, followed the tracks of the big wagon. The relief party, as much in search of a young ranchman named Smith as us, found his frozen body lying against a log near where we were discovered. He had been dead for several days.

Although our supply of food was insufficient for wintering in the mountain, we killed some small game, which we cooked and ate. Our blankets are too thin for this country, but with the aid of a good camp fire each night we managed to keep fairly warm, although our hands and feet nearly froze. We walked into Flagstaff tonight, leaving our car 4 miles out, in the midst of a drift that almost conceals it. We expect to go after it in the morning and run it into Flagstaff.—PERCY F. MEGARGEL.

Winslow, Ariz., Dec. 27—Reo Mountaineer reached here today. Christmas was spent in the snow crossing Canyon Diablo. The nights are below zero. The last three caught us outdoors.—PERCY F. MEGARGEL.

INCIDENTS OF MEGARGEL'S FLAGSTAFF ADVENTURE

GERMANY'S SHOW

Berlin, Dec. 17—An outline of the plans of the show to be held here from February 3 to 18, under the auspices and joint control of the Automobile Club of Germany, and the Association of German Motor Vehicle Manufacturers, is out. It will be held in Landes Austellungs park, near the Lehrte railway station, within easy access to all parts of Berlin. The exhibition will be divided into five sections, as follows: Motor cars, for the transportation of persons, also for sanitary, fire department and military service; motor cars for industrial purposes; motor cycles; motor boats in so far as the size and conditions of the exhibition space may be adequate and adaptable to such exhibits; parts and accessories of motor cars, including wheels, tires, together with automobile clothing, literature pertaining to the use of automobiles for sport, travel and transportation, and drawings and touring maps. Rent for floor space will be at the rate of $7.14 and wall space $5.95 per square meter. For outdoor exhibits space will be charged for at the rate of $2.38 per square meter.

CITY PAYS DAMAGES

Milwaukee, Dec. 24—The city of Milwaukee will be forced to pay for the automobile of Dr. A. C. Sidler, which was torn to pieces in a collision with a manhole on Trowbridge avenue, between Delaware and Kinnickinnic avenue, Friday night. The manhole stood 16 inches above the pavement and was unmarked by a light. The city will pay without a fight the price of the automobile.

REO MAKES A RECORD

Touring Car Completes 1,000-Mile Non-Stop Run Under Difficulties at Capital

Washington, D. C., Dec. 22—L. S. Jullien, the Reo agent here, C. C. Singer and R. S. Lockwood, of the New York branch of the Reo Motor Car Co., had a taste of the strenuous life this week when they succeeded in making a 1,000-mile nonstop run on the streets of Washington in a 16-horsepower Reo touring car. No such a run had ever before been attempted here and its progress was watched with more than ordinary interest by automobilists. The weather conditions were all against the run, for the night before the start there was a heavy snow storm which left the streets in terrible condition. Added to these unfavorable conditions was the undue interference of the police, who attempted in every way possible to circumvent the drivers in their efforts to run a thousand miles over the streets of the capital city without stopping the engine. These were handicaps hard to overcome, but Jullien, Lockwood and Singer were determined to achieve their object, and they came out of the contest with flying colors, although Singer was mulcted out of $30 by a police court judge on two charges of violating the speed law in different places.

Jullien had been planning for this run for several weeks. He thought he had it all worked out to his satisfaction, but after the run was well under way all the plans had to be changed because of the activity of the police. The original plan called for the run to be made on Pennsylvania avenue, the principal street, starting from Washington circle and running to the Peace monument, a distance of about a mile in each direction. This route was taken for several hours, when the car was ordered off the avenue on the ground that it was a nuisance. After that the drivers did not follow any regular route, but drove where the conditions were most favorable. Several trips were made into the country during the day time, but at night the car was kept running over the city streets.

The car used was one of this year's models. It was equipped with Goodrich tires, while a Jones speedometer-odometer was used for checking purposes. Aside from the loss of a staybolt there were no mechanical or tire troubles and the entire distance was covered in 70½ hours. A record was not the object of the run, the sole purpose being to demonstrate that the car could cover 1,000 miles without stopping the engine.

Promptly at 11 o'clock on the morning of December 18 the car was sent away on its long journey with Jullien at the wheel.

Digitized by Google

The car plowed its way through the snow and slush and the engine was working in great shape when Lockwood took his turn 2 hours later. Each driver handled the car 2 hours and then laid off 4 hours for sleep. Aside from the disagreeable weather conditions nothing transpired to mar the run until 4 o'clock Tuesday morning, when Singer was arrested while on Pennsylvania avenue. After arguing the question for some time the policeman finally agreed to let Singer go if Jullien would give his personal bond for Singer's appearance in court. This was arranged and the run was again resumed after its narrow escape from being stopped by Singer's arrest. The next day during his period off Singer appeared in court and was fined $30, which he cheerfully paid to the clerk.

Tuesday afternoon the drivers were thunderstruck to learn that the major of police had issued a general order commanding the police throughout the city to make as many charges against the drivers that the car would have to keep off Pennsylvania avenue during the busy hours, so frequent trips into the country were made, while at night unfrequented streets were used. The police were unable to make a single charge against the drivers and they were enabled to finish their great run without further molestation. The run was finished at 9:23 Thursday morning, December 21.

Despite all these drawbacks the public took intense interest in the trial. Doubtless the police cannot be blamed much for their vigilance, for if they had not been strict in the matter the traffic on the principal thoroughfares would have been effectually sewed up just at the busiest time. Still, the motorists following the test felt aggrieved and there was considerable grumbling over the high-handed methods taken by the powers that be to shunt the Reo into the background. The performance was highly commendable and Jullien and his mate deserve credit for their plucky fight against adverse weather, not to mention the obnoxious cops. It would not have been so bad if the city streets could have been used altogether, but those excursions out into the country where the snow and slush made the going hard told on the total time.

MERCEDES RUMOR

London, Dec. 16—It is rumored arrangements are now in progress for a flotation of the Mercedes company, but it has not been confirmed from official sources. It is, however, worth noting that the concession for the remainder of Europe, outside Germany, which a certain Parisian concern has held for some years, is stated to have just expired, and it is suggested—perhaps it has inspired the rumor—that the German concern is now at liberty to make other arrangements and to float for a considerable sum, without any necessity to consider interests other than its own.

MUST FIX OWN BREAKS

Rules for French Race Bar Outside Aid—May Use Fontainbleu Circuit

Paris, Dec. 14—The French club's tire race is an ill-starred event. When first proposed few people took it seriously and now, after struggling to the rules and regulations stage, it is in grave danger of being allowed to lie dusty and forgotten in the pigeon holes of the clubrooms. The sudden decision of the club to hold a road race next year is the cause of the fall in the fortunes of the tire race. No second bidding was needed by the sporting commission to prepare for the 1906 grand prize, and, although it only received its order a few days ago, arrangements are in an advanced stage. Radical changes have been made and next year there will be no work for specially trained tire experts, for all changes or repairs of pneumatics, fitting of gasoline or other tanks, must be done by the driver and his mechanic. There will be repair stations as heretofore, but everything required to be done on the car must be done by the two men in charge of the machine. Heath is not enchanted with the new arrangement; Albert Clement thinks it will be fine exercise; Hémery and Caillos like it, whilst Thery and his mechanic, Muller, having both retired from the business, do not care a rap.

Not more than four cars can be entered by one factory. Firms constructing under a license will be considered as part of the original firm and will not be allowed to enter more than four cars in all. Should entries be very numerous the number will be reduced to three each.

Fontainebleau is the most popular circuit at the present moment, and the odds are great that it will carry it over the Ardennes and the mountainous track known as Auvergne. The center of the proposed circuit is not more than 30 miles from Paris, the roads are perfect, having long, straight stretches, a few hills, no dangerous turns, and no grade crossings. They all run through splendid forest land, and owing to the shortness of the circuit—about 53 miles—and the fact that some of the roads in the center will have to be passed by each competitor three or four times to accomplish one round, the race could be followed much more interestingly than on some of the long circuits through isolated country, devoid of telephonic or telegraphic communication. The points where cars would have to cross the original track are at big clearings in the forest, meeting places of the hounds in ancient days, where there is sufficient room to construct separate tracks for cars going in different directions.

Propositions will still be considered by the club, but if nothing better than the Fontainebleau circuit is discovered within the next few days, it is certain that next year's race will be run at the gates of Paris. Long Island record crowds will appear as nothing, compared with the masses which will be at Fontainebleau for the race.

REO CAR WHICH MADE A 1000-MILE NON-STOP RUN

Much interest is centered in the Peugeot motor cycle exposed at the show, on which Giuppone lowered the world's motor cycle track record for 1 hour. On this specially constructed machine, which carries a 12-horsepower two-cylinder motor, and weighs, altogether, but 114 pounds, Giuppone was given a standing start on the Pare de Princes track the day after the opening of the salon. In 3 minutes 34⅘ seconds he had got over the first 10 kilometers, in half an hour he had covered 32.024 miles, and when the 60 minutes were called off he had traveled exactly 63.6 miles. The fastest round of the track was accomplished at an average speed of 70 miles an hour. Maurice Fournier's world's record for the 10 kilometers, established in 1903, was reduced by 17 seconds. Giuppone's time was taken every 10 kilometers and compares with Anzanisi's 1-hour track record as follows:

Miles	Guippone	Anzanisi
6.2	05:34 4-5	06:29 4-5
12.4	11:21 3-5	13:01 4-5
18.6	17:14	19:37 3-5
24.8	23:08 2-5	26:00 1-5
31.0	29:01 3-5	32:28 1-5
37.2	34:52 4-5	38:56 3-5
43.4	40:54 1-5	44:49 1-5
49.7	46:51 2-5	51:10 4-5
55.9	52:55 3-5	57:31 2-5
62.1	58:38 1-5	1:04:14 2-5
Hour	63.6 miles	58.2 miles

FOR THE ENGLISH KIDS

London, Dec. 16—For the Christmas trade in toys for the children, English novelty manufacturers have turned out some little motor cars, from 11 to 15 inches long, finished with pneumatic ruber tires and able to run straight or in a circle. One is a racer, and another, with lamps and brake, has a nickeled headlight that can be lit. Among the latest novelties is a motor omnibus driven by clockwork, beautifully modeled and japanned and running on rubber-tired wheels. Another source of joy to a boy is a motor outfit.

Digitized by Google

MAY UPSET ROAD WORK

Action of the Minnesota Legislature Likely to Knock Out Highway Commission

St. Paul, Dec. 22—The Minnesota Good Roads Association held its state meeting in the capitol building in this city yesterday, and beyond a rather interesting display of fireworks, little actual work was done. The meeting served to bring out the fact, however, that Minnesota's new highway commission law may after all be knocked out before it is well started. According to statements made by Minneapolis delegates to the good roads meeting, the legislature first passed a highway commission law and then turned around and recommended a constitutional amendment which legislates the highway commission out of business. The constitutional amendment was ostensibly to increase the amount of the state tax for roads and bridges, but in re-enacting the section of the constitution, the legislators entirely left out the authority for a highway commission.

Governor Johnson will go ahead and appoint his highway commissioners next week, however, and it will start work January 1. The state legal department will be asked to pass upon the new amendment, and if it actually does revoke all authority, express or implied, for a highway commission, the good roads association will begin an immediate campaign throughout the state, to defeat the amendment when it comes before the voters.

The country and city districts mixed at the meeting yesterday in some interesting debates. Representatives from the newer sections of central and northern Minnesota objected strongly to the statements of city delegates that the farmers knew nothing about road making. "The farmers made the roads that have built up Minnesota," declared one member, "and they know the principles of practical road building. Up in our country we don't want automobile roads at $3,000 a mile, but we want more good hard country roads and more state aid to build them."

It is generally agreed that the new state highway commission, if invested with full power, as the law intends, will start Minnesota upon a new era of road building. It is hoped that implied authority will be found in the constitution for the creation of the commission, so that the constitutional amendment approved by the legislature may be accepted by the people, even though it leaves out the provision authorizing a commission. This amendment increases the road tax from 1-20 to ¼ of 1 mill on the property of the state. It will mean a fund of nearly $250,000, instead of the present income of $60,000. With this amount the commission can do a great deal of work within the next few years.

Jackson, Mich., Dec. 23—The rousing good roads meeting which Mayor Tood has planned to hold in this city will probably come off January 4. It is expected that a large number of persons from all over the state will be present, and, as about 400 are expected from Jackson county alone, the number will swell to probably double that number. Some excellent speakers have been secured, among them being State Highway Commissioner Horatio S. Earle of Lansing and J. D. Dort of Flint. Among the prominent men of this county who are interested in the success of the meeting, and who have promised to take an active part in the sessions, are Arthur L. Landon of Springport, James A. Dean of Parma, J. D. Ballard of Leoni, Edward Ambler of Brooklyn, J. Russell Fisk of Tompkins, W. B. White of Summit and David Croman of Munith.

Since the initiative step was taken by Mayor Todd the township of Henrietta in this county has started along the road that leads to good roads. At a meeting of voters it was decided to build at least 1 mile of good road every year. This will be started in the spring.

TO FIGHT THE GRAFTERS

Philadelphia, Dec. 23—The Philadelphia Automobile Trade Association is about to take up the subject of chauffeur graft. Many members of the association have recently been solicited by chauffeurs of private owners for a rake-off on the sale of a car on the ground that without their O. K. the sale would have gone elsewhere. In at least two cases the hold-up was attempted even before the purchase, the chauffeur going from agency to agency, getting the highest figures, boldly announcing his intention of recommending the car which brought him the largest commission. The matter was quietly brought to the attention of the officers of the association, and an inquiry along the row soon brought to light the fact that few of the prominent branch managers and agents had not been so approached, many of them half a dozen times. It also developed that in a few instances some of the tradesmen, particularly anxious to effect a sale, had allowed themselves to be muleted of a portion of their profits. One case was brought to light where a chauffeur, after the sale of a car and the refusal of the agent to cough up, had actually threatened to give the car a black eye—this despite the fact that his employer had not even consulted him as to what machine to purchase. This grafting operation, it appears, has not been confined to the cars themselves, but to everything in the nature of supplies as well—tires, oils, repairs, etc.—and has been quietly assuming such proportions that the association is determined to put a stop to it before it becomes universal.

MATINEE BEACH MEETS

Philadelphia, Dec. 26—A. H. Chadbourne, manager of the Cape May Automobile Club, has in mind the promotion on that beach next season a series of matinee races on the lines of similar trotting contests, which were successful at the Empire City track, under the administration of Alfred Reeves. The plan is to divide the cars into various speed classes and as they win in their own class to move them up to the class above. Prizes of nominal value are given for each race and trophies at the end of the season go to those cars which have progressed most successfully from one class to another. Club races might be run the same way.

LIFT BAN ON STEAMER

Britons Propose Special Fuel Allowance or Cars Like the White in Trophy Race

London, Dec. 15—The regulations for the British Tourist trophy race of 1906 has just been issued by the automobile club and it is evident therefrom that pressure brought to bear by the Society of Motor Manufacturers and Traders has resulted in the abandonment of the preferential treatment which was proposed in favor of steam cars. Owing in a great degree to the sportsmanlike attitude of Frederick Coleman, of the White Steam Car Co., who, with a full knowledge of the disadvantages under which his car would labor in a fuel competition as against internal explosion engines, entered two cars and did remarkably well in the race, which was held in the Isle of Man last September, the officials were induced to propose a special fuel allowance for steam cars for 1906, equivalent to about 16 miles per gallon. But as there are practically only three steam cars selling in this country, and all the development appears to be in the direction of the internal combustion engine, the proposal was received with much dissent, which culminated in the remonstrance of the Society of Motor Manufacturers to the automobile club. As a remonstrance of that kind is, in itself, a veiled threat, the club had no alternative than to treat the test as being a purely consumption trial.

The more reasonable motorists, however, while not agreeing with the proposal of the club to permit an arbitrary allowance of fuel to particular types of cars in competition with others less favored, think that, as steam cars use lower grade fuel, the cost rather than the quantity should have been the basis from which the question could have been fairly decided, more particularly as such a basis would have induced a tendency towards using low grade spirit. As the rules stand, every car must use spirit of a specific gravity between 0.695 and 0.705 at 60 degrees Fahrenheit. The other conditions which are new are, that the minimum weight of chassis shall not be less than 1,275 pounds, while the load to be carried, exclusive of fuel, water, oil and replacements, shall not be less than 1,125 pounds. This is to include weight of driver and one passenger. The principal alteration here is that the maximum weight of chassis, insisted upon last year, is now removed, consequently the manufacturer can make his car any weight he chooses so long as it is not less than the minimum. Other fresh conditions are that every car before competing must demonstrate it can be driven for half a mile on a level road on the top gear at a speed of 12 miles an hour without any manipulation of the clutch, and it must also be capable of starting on and ascending an incline of 1 in 6. This is, of course, done in order to prevent abnormally high gears being used in assisting the car on down hill stretches only, and also to insure that the car has a starting speed gear sufficiently low to make it a practical road vehicle.

Digitized by Google

The projected tire trials of the Automobile Club of Great Britain and Ireland have been postponed for a fortnight, and the date for receiving entries extended to the end of January. This result has no doubt been arrived at by the disinclination of the leading manufacturers to give it their support, and the disadvantage to the less important firms of having to push through arrangements for, to them, a very important event, inside practically a month. All the large firms possess sufficient cars to enable them to know how many sets of tires they wished to enter, if they so desire, but with the small firms the matter is different, and as the success of the event appears to now hinge on the support of this latter class, the date had to be extended to give them time to make the necessary arrangements, not for tires, but for cars. It is stated the Dunlop, Palmer, Michelin and Continental tire companies will not take part in the contest, and as nine-tenths of the motor tire trade of the country is done by these four firms, the trading interest in the event will probably be little.

AS ENGLISH FOUND PARIS

London, Dec. 16—From all accounts the actual commercial results obtained by placing the Olympia show date in front of Paris has resulted pretty much as the British trade anticipated. At least that is the opinion of those members of the British trade who have been on duty as English representatives on the stands in the Grand Palais. Although the press correspondents who were across have asserted that the stream of English and American visitors has been even more pronounced than at any previous Paris show, the experience of the English representatives has been that little of British business was there to be gathered in, and that, in any case, little of such business was obtained by them. How this condition of affairs will be dealt with by the French trade and the French automobile club, is not known, but it is just possible that the Paris date may be changed. So far as the business obtained for British shown goods, such as the Napier, Humber, Wolseley and Star, there is no brag, if there are no details worth publishing, so that one may take it that business for these, too, was quiet and had all been secured at Olympia.

HAD HARD TRIP

Alpena, Mich., Dec. 23—One of the most interesting automobile trips ever taken was participated in by C. F. Steele and Joseph Germain, of this city, who have just returned from Onaway. At Onaway they delivered an automobile to C. H. Freeman, an insurance agent and owner of the Onaway opera house. It was the first one ever seen in that section of Michigan. It took a little more than 7 hours to make the trip, a distance of 70 miles, and a great many stops had to be made along the way to explain to farmers just what it was in which they were riding. Travel was also impeded by 5 inches of snow. During the whole distance the roads were exceedingly bad. The trip over the jack pine plains to Valentine lake was a lonely one, and from Valentine to Onaway, a distance of 24 miles, the journey was still more dreary. Only one person was seen in 36 miles of travel.

CAR FACTOR AT POLLS

British Motorists, Fighting for Repeal of Speed Limit, Think They Hold Whip Hand

London, Dec. 16—It is generally considered that England is now on the threshold of a general election of members to parliament, and in consequence motorists are bestirring themselves to see in what manner the event can be turned to their advantage. Sir Alfred Harmsworth, who, by the way, has been created a baronet by the out-going conservative ministry, has issued a formal letter, in which he proposes that every motorist should aid the candidate who appealed to him for his suffrage and the assistance of his motor car. It is generally considered that the motor car will play an important part in the impending election.

It is a remarkable fact, but nevertheless one which has always been accepted, that people who spend the most of their time in discussing politics with more or less ardor, should on the one day of days, upon which they can put their ideas and opinions into concrete form, be swayed or intimidated or prevented from registering their votes by the mere matter of personal convenience in getting to and from the polls. But the paradox is there and in that knowledge lies the motorists' strength.

Sir Alfred Harmsworth suggests no motor car should be lent to any candidate to carry voters to the poll unless he pledged himself to assist in the new parliament towards ameliorating the motorists' position by altering the new motor car act so as to eliminate the speed limit. It is, perhaps, as well to explain here that parliamentary candidates are not permitted to hire vehicles to convey voters to the poll. In legal phraseology this is classed as intimidation and corruption, but as there are many other ways of choking the dog, the restriction simply plays into the hand of the candidate with the greater following among those who possess vehicles which can be loaned. It is also open to political associations to arrange for the assistance of vehicles on behalf of the candidates of their particular choice, so that in the long run the matter comes to practically the same thing. But, particularly in country constituencies where voters are inconveniently situated to get to the polling booths, the motor car is certain to be of great assistance, inasmuch as it will cover 20 miles to a booth in less time than an ordinary horse vehicle will cover half the distance, besides which the capacity of the automobile is one of time, not mere physical energy, so that the side which can command the greatest number of motor cars can be expected to poll the greater number of its political strength.

It is not difficult to see that at the present time this preponderance will fall to the conservative party; the agents of that party have been organizing their motor car resources so they can be concentrated and flung, like a military division in war, on the points at which it will be most effective, however widely separated. Motorists in general realize that here is their opportunity to demonstrate their strength and gain the legislation they have been demanding. With such valuable ammunition at hand in the way of quick transportation facilities for the voters, what politician will have the temerity to stand out against them, and if he does, what show will he have to be elected if he depends upon the horse-drawn vehicle to bring his voting strength to market? The motorists, if they only realize it and stick together in this fight, can win.

WANT NEW LAW PASSED

Syracuse, N. Y., Dec. 26—Syracuse automobilists are uniformly in favor of a law creating a New York state automobile commission, which shall take care of the interests of the automobilists. Whether this should take the form of a state highway commission with a bureau devoted to automobiling has not been decided. In case a bill is passed by the legislature creating such a commission Frederick H. Elliott, of this city, secretary of the New York State Automobile Association, will be a candidate for one of the places on the commission and will have the support of a large number of automobilists throughout this section.

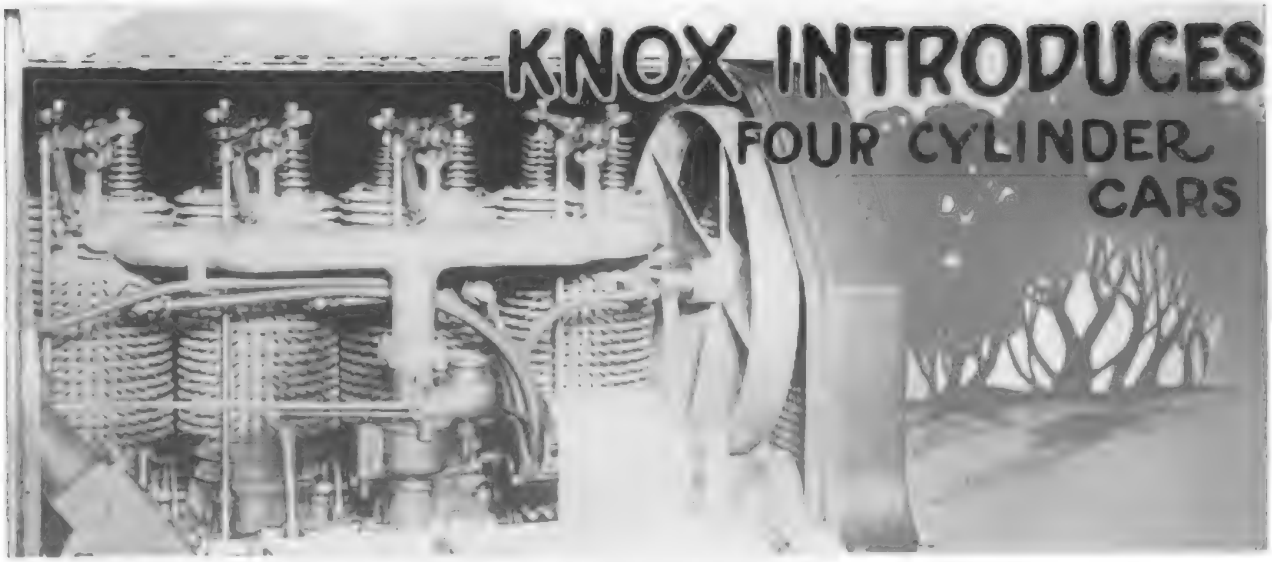
The matter will be threshed out at a meeting of the directors of the association during the New York show, and whatever is decided upon will be embodied in the form of a bill to be introduced into the legislature.

The automobilists are dissatisfied with the manner in which they have been treated at Albany. They are in favor of a graduated tax upon all motor vehicles, the money to go into the good roads maintenance fund. Secretary Elliott has letters from Winthrop B. Scarritt, former president of the A. A. A., and from William H. Hotchkiss, of Buffalo, president of the state association. Judge Hotchkiss favors a state highway commission to include a bureau in charge of vehicles using the highways. This he believes necessary on account of the good roads amendment to the constitution recently passed, providing for the expenditure of $50,000,000 for good roads throughout the state. It is thought that since such a large sum is to be expended, the roads should be looked after by a commission. Mr. Elliott agrees with whichever plan it is decided would be for the best interests of the state. President L. G. DeCamp, of the Watertown Automobile Club, recently held a conference here with Mr. Elliott, H. H. Franklin and other prominent automobilists who were agreed that some sort of a commission should be appointed.

BUCKEYE ENTERPRISE

Toledo, O., Dec. 26—John Jenkins, recently of pugilistic fame, has moved to Urbana, O., where it is rumored he is contemplating starting a motor bus line between Urbana and Mechanicsburg. The proposition at present is to use only one car over the route until the line has been popularized a little, when a second car will be added and the trips doubled. Urbana and Mechanicsburg have no direct railroad connections, a fact which makes the starting of a motor bus line a particularly favorable enterprise.

Digitized by Google



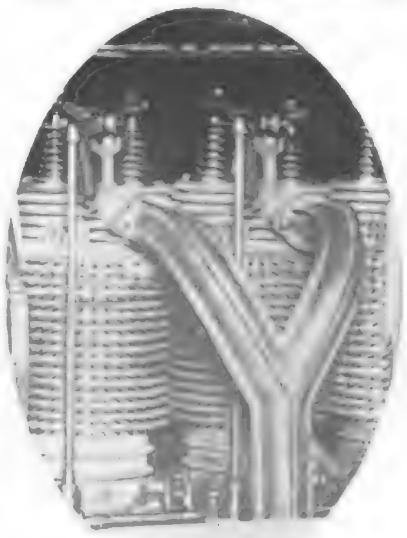
KNOX INTRODUCES FOUR CYLINDER CARS

NO TENDENCY in air-cooled machines for the approaching season is more conspicuous than the use of four vertical cylinders and the transmission of power through some form of clutch and sliding gear set. In previous issues Motor Age has described and illustrated the majority of the large air-cooled cars, many of which are built on similar lines. This week the Knox, built by the Knox Automobile Co., Springfield, Mass., the pioneer of air-cooled motors, is presented. This, too, has four cylinders placed vertically in front and has the power transmitted through a metal-to-metal cone clutch, running in oil, a Mercedes type of sliding gear and double chains. In addition to three models of this type the company is retaining its line of two-cylinder opposed air-cooled motors, all of which show many 1906 improvements, among which, most prominent, is a decided lessening of noise.

In the four-cylinder car, model G, the trade name of the new machine, as in all air-coolers, each cylinder is a separate casting, with the head integral and valve ports not required, because of placing the mechanical admission and exhaust valves side by side in cages, which reside in separate openings in the cylinder head, being secured therein by a single screw, with the consequent result that not a minute is needed to remove one. A two-part aluminum crankcase carries the four cylinders, each secured by vertical bolts passing through a bottom flange on the cylinders.

The Knox company, in all its horizontal motors of the present and past seasons has cooled by the pin, commonly known as the porcupine scheme, and which has worked without change for six seasons. It has been used in both pleasure and commercial machines, many of the latter working 12 months in the year in tropical countries like Cuba and other parts of the West Indies. Each cylinder is covered with corrugated pins—the corrugations spiral-like—screwed into the walls. These pins in model G are arranged in thirty-two rows encircling each cylinder, with some fifty pins to each row. The sharp edges of the corrugations on the pins make good radiating surfaces and the pins, entering the cylinder walls ⅛ inch, draw the heat from the inter portion of the wall as well as from the outside surface. Each pin is 1 3-16 inch long and ¼ inch in diameter. Much experimenting has been done by the company in determining the exact proportion of radiating surface and air blast and in properly locating the pins. Other experimenting was made in fan construction, with the result that the fan is of large diameter and is carried on a separate bracket on the front of the crankcase. The fan blades are made like those of a propeller and are integral with the hub and periphery band. On the cylinder walls below the pin portion are two circular radiating flanges, and on the head of each are five other flanges, made extra deep. Both of the Y-shaped exhaust pipings from the cylinders are made with four radiating ribs, which should be included in the general cooling scheme. This model has been tested under all the varying circumstances common to motoring and have the cooling features worked successfully. Cylinder bore and stroke are 4¾ and 5½ inches.

Apart from the cooling arrangements the



EXHAUST SIDE OF TWO KNOX CYLINDERS

valve actuation is deserving of special notice, inasmuch as it is by a separate overhead rocker arm for each valve, and that any valve can be removed or replaced in a few seconds. The inlets and exhausts are made interchangeable. They have a diameter of 2 inches, the inlets with a lift of ¼ inch and the exhaust ⅜ inch. Steel and nickel alloy serve in their composition. In actuation two camshafts are required, one at the right for the intakes and one on the left for the exhausts. Each camshaft runs in three bronze bearings and is driven through steel and bronze gears, enclosed in aluminum cases, on the front of the motor. Push rods with the usual rollers for bearing upon the cams work in long vertical sleeve guides on the crankshaft, their only support, and at their tops, rounded for the occasion, rest in cup-shaped receptacles in the ends of the rocker arms. A short coil spring, with one end secured to the cylinder head and the other to the rocker arm, keeps the arm resting at all times on the rod, and prevents striking noises that would result if they were not held together. One end of the spring hooks to the cylinder head and can be quickly removed. All rocker arms are angularly placed on the heads and supported by yoked standards screwed into the cylinder heads, within the yokes of which the rocker arms are pivoted on bolts pinned in position. The end of the rocker arm resting on the top of the valve stem is yoked, and carries between the yoke arms a screw stud, which can be adjusted to vary the valve lift. Another screw in the yoke arms acts as a locknut for this one. By not having the rocker arms pivoted to either the valve stems or the push rods it does not interfere much in valve removal.

The crankcase, a split aluminum chamber, carries the five crankshaft bearings in its upper half, the lower portion serving for carrying oil. The crankshaft is made from nickel steel, cut from the solid slab and turned and ground to a balanced finish. Each of the five bearings are 1⅝ inches in diameter and the four forward ones are 2⅞ inches long, the one at the flywheel end having a length of 4 inches. Bronze bearings are used throughout. The pistons.

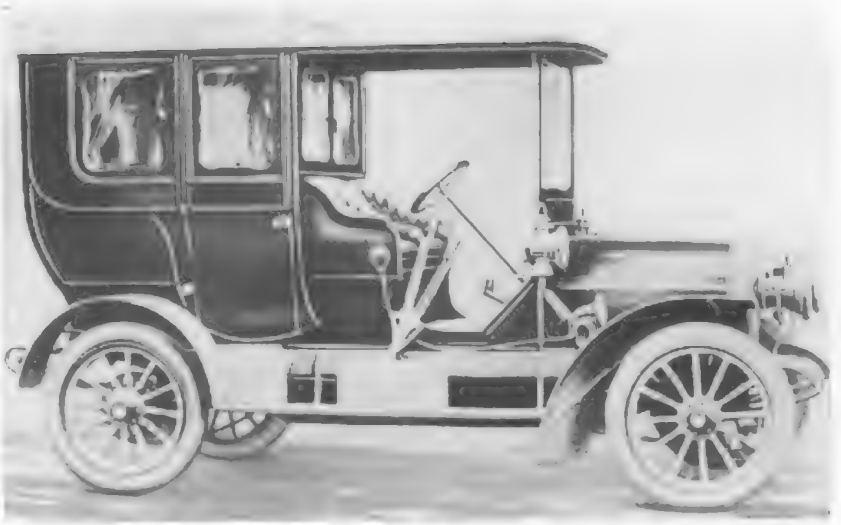
Digitized by Google

follow typical lines in every detail and are carried on the connecting rods by hardened steel pins 1 inch in diameter and affording a bearing in the connecting rods 2¼ inches in length. The crankpin bearings are 2½ inches long and have a 1¾-inch diameter. Each piston carries three compression rings.

Attention has been given the lubrication of all engine parts. In the bottom of the crankcase, which is considerably dropped for the purpose, is a rotary oil pump, working in an oil well, the pump being driven from the exhaust camshaft by spiral gears and a vertical shaft. From this pump oil ways lead to all bearings of the crankshaft, and by means of hollow connecting rods the crank pins are lubricated. The pump is of sufficient capacity and power to force a large oil surplus, the bearings being designed so this excess drains off and falls into the crankcase, being strained and used again. A pressure regulating valve is placed in the system, and on the dash is placed a regulator. By a nut and screw adjustment on the regulating valve any desired oil pressure may be obtained. This pressure is shown by the indicator. By this system oil is furnished in direct proportions to the motor speed. The disposition of the pump, its drive and the oil leads are shown in the side elevation view of the chassis.

A touch of foreign construction is seen in the ignition, in which ordinary spark plugs carried horizontally in the right side of the cylinders below the inlet valves are supplied with current from a high tension magneto carried on the right side of the crankcase. The magneto is gear driven. The current in the magneto is low tension, but is transformed to high tension in a single coil within the magneto and is distributed to the plugs by a secondary distributer, which forms a part of the magneto. A dry battery is carried for emergency uses. One wire connects from the magneto to each plug and a fifth connects with the dash, where a switch serves to connect the dry cells.

A Holley carbureter furnishes mixture, which passes by way of a three-Y piping to the inlet valves. Both governor and hand control are used on the throttle. The throttle arm, which can be seen hanging almost



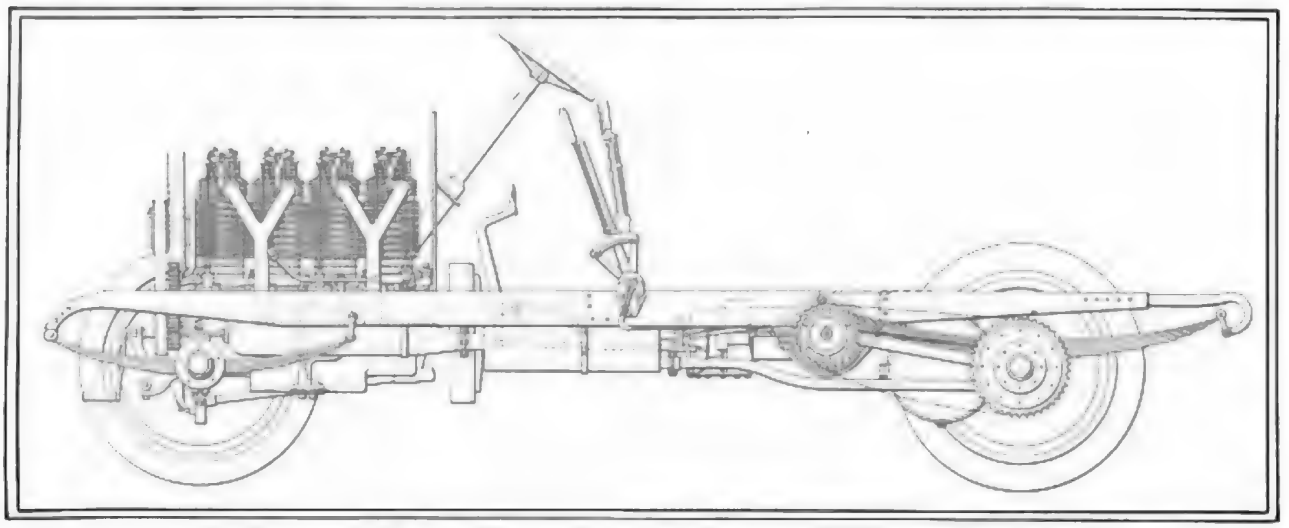
KNOX 35-40 HORSEPOWER LIMOUSINE CAR

vertically at the side of the mixing chamber, connects by a rod with the steering column control and beneath the connection with this rod it connects with a shorter one to the clutch. A spring surrounds the clutch rod, one end resting against a washer on the rod and the other against a ring on a horizontal arm connected with the clutch. The spring permits the throttle being controlled irrespective of the clutch. With this connection the motor speed falls when the clutch is withdrawn, but immediately resumes the original speed on engagement.

An innovation in American practice is shown in the metal-to-metal cone clutch. An oil-tight chamber encloses the cone surfaces and a few spoonfuls of oil is sufficient to lubricate them for a week's service. When the clutch is not engaged the surfaces of both the male and female parts are covered with an oil film, which must be expelled before both parts are positively connected. Time is required in this expulsion, which is sufficient to prevent the car starting with a jump when the clutch is thrown in.

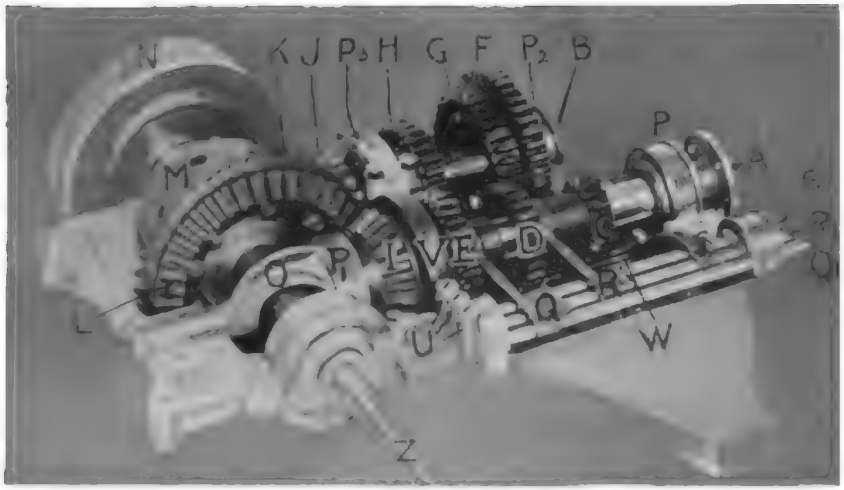
A universal joint is not used between the clutch and gearbox. The latter is patterned along Mercedes lines and gives four forward speeds and one reverse, all obtained on the selective system through three sliding units within the case and through a single lever working in a gate quadrant. Throughout the gear set only materials with high tensile strength have been used, the shafts being made of nickel steel showing tests above 120,000 pounds to the square inch. The gears are made of chrome nickel steel capable of withstanding a strain of 175,000 pounds to the square inch. Non-adjustable Hess-Bright ball bearings are used on all shafts. The case, of cast aluminum and divided horizontally in line with the main shaft bearings, takes its support through four integral arms; the forward pair being very wide and the rear pair only the width of the differential housing part. In the top portion are easily-removable inspection covers.

The main shaft A is of large diameter and has four fluted keys to drive the two sliding members, gears E and D-C. It is coupled direct to the clutch shaft and revolves in a long bearing P at the front and another P1 at the rear. The latter bearing is carried from the floor of the case and



SIDE ELEVATION OF CHASSIS OF KNOX 35-40 HORSEPOWER AIR-COOLED FOUR-CYLINDER TOURING CAR

Digitized by Google



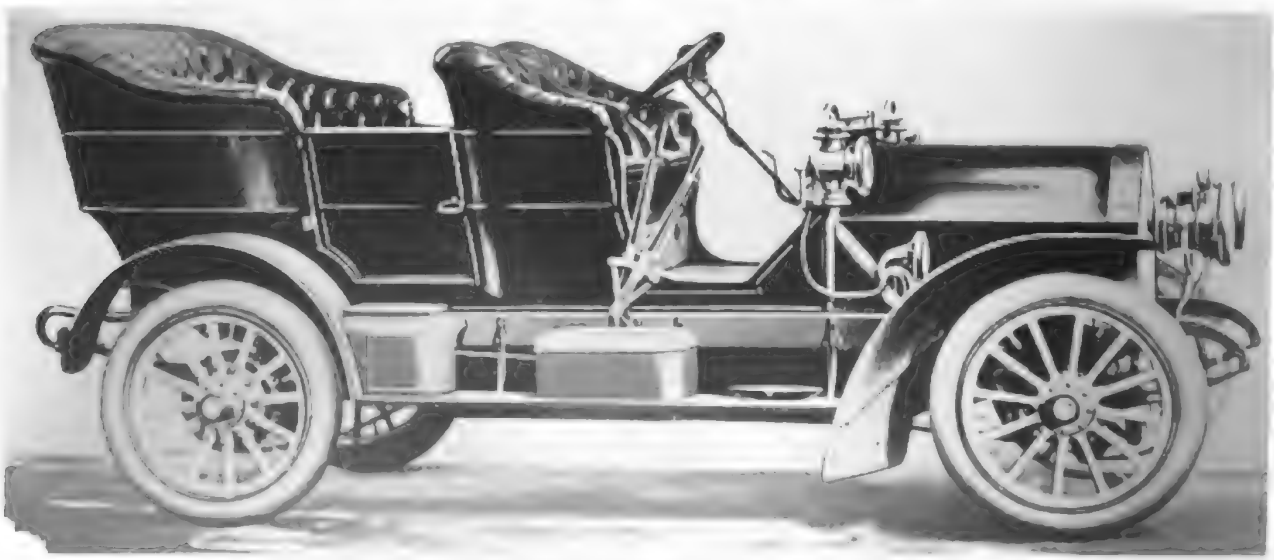
KNOX SELECTIVE SLIDING GEAR SET

is braced by an arched arm O spanning the jackshaft and resting against the rear end of the case. The counter shaft B runs in a pair of bearings P2 and P3 and has the three spur gears F, G and H rigidly secured to it and also the bevel gear J, which meshes with one of the bevels K on the differential. The gears of the differential are of the bevel variety and are enclosed in the perforated case M. Another differential bevel L, is in constant mesh with the bevel I which, by the way, is integral with an internal gear V, both being on a short hollow shaft within which is the rear end of the shaft A, having its rear Hess-Bright bearings within these gears. It is thus apparent that the shaft A can be revolved while the gears I and V are idle. For direct drive or fourth speed the gear E is moved into the internal gear V, thus locking the shaft A with the bevel I and driving through this bevel and bevel L on the differential. On this speed the countershaft with its gears is revolving but none of the gears are in mesh. For the other three forward speeds and the reverse the drive to the differential is through the bevel J on the countershaft and K on the differential. Third speed is obtained by meshing sliding gear E with H on the countershaft, the former being moved through the shifting rod yoke Q and the rod Q1, for second speed gears D and G and meshed through the shifting yoke R and its rod R1 and on slow speed gears C and F are meshed through the same shifting mechanisms. In reversing an idler W on a separate shaft in the bottom of the case is jointly meshed with gears C and F by shifting yoke S and rod S1. The three shifting rods are operated from a single lever working on the ordinary selective principle. Three plunger balls are contained within the casings U. Each is held down by a spiral spring and enters in a cavity in the top side of its respective shifting rod when the gears moved by the rod are in perfect mesh.

In connection with the speed changing arrangements can be noted the regular brake, which is of the metal-to-metal variety and in the form of a band operating on the drum N on the jackshaft. Emergency brakes are of the internal expanding type, located within dustproof drums on the back wheels. They are applied by the side lever and are connected with the clutch so that their engagement disengages the latter, whereas the pedal brake is furnished either connected with or not.

As in all previous Knox chassis strength has been an object. Both axles are of I-beam section, forged from a special grade of nickel steel made with a tensile strength of 120,000 pounds. Each is made in a single piece and is oil-tempered and annealed. The steering pivots and levers are single forgings made from the same material. Axle dimensions are 2 by 1½ inches, the rear axle is stationary and straight throughout and the forward one stepped 4¾ inches inside of the front spring seating so as to afford protection for the bottom of the engine case. All road wheels are 34 inches in diameter, the forward tires are 4 inches and those on the rear 4½ inches in diameter. Imported Hess-Bright ball bearings are used in all of them. Pressed steel constitutes the frame pieces, the side members of which are straight throughout and made in channel sections with a 5-inch depth at the center and 1½-inch channel webs and a uniform wall thickness of 5-32 inch. Short spring hangers serve in front but in rear are the long curved familiar Daimler type. Four semi-elliptic springs connect the frame and axles—the forward 42 inches in length and 2 inches wide and the rear pair 54 inches long and of the same width. The wheel base approximates 112 in both the touring car and limousine and the tread is standard.

As in the power and transmission plants, innovation in the body lines is met, in fact, in the new body types, two of which are illustrated, not a point of resemblance can be found with present models. In the touring car room for five passengers is provided in the tonneau, the rear seat accommodating three, and two jump seats serving for the others. Wide side entrances are used, the front seats are divided, and running board and large fenders are conventional throughout. A honeycomb type wire screen forms the front of the hood and by surrounding it with a heavy brass framework, a radiator effect is produced.



KNOX MODEL G, 1907 FOUR-CYLINDER AIR-COOLED 35-40 HORSEPOWER TOURING CAR

Digitized by Google

FROM *the* FOUR WINDS

EX-BENNETT CUP CANDIDATE CONVERTED INTO TOURING CAR

Next English Show—Crystal Palace is next on the English show circuit, the dates being January 26 to February 3.

Converted Racer—John Hargreaves, whose 80-horsepower Napier took part in the English eliminating trial to pick a team for the Bennett race, has converted the racer into a touring car.

Invites Everyone—The American Motor League invites all automobilists who go to the shows at New York to attend the league convention, which takes place during the same week. Reduced rates of fare have been secured from all railroad lines, covering the entire week.

Woman Passes—The first woman to pass the rigid test of the Automobile Club of Great Britain and Ireland for a driver's license is Miss Mee, a daughter of a West Sussex clergyman. Miss Mee has also demonstrated her motoring cleverness by turning in a paper on the motor car act that is declared to be the best submitted so far.

Ross Passes Up Ormond—Owing to a difference of opinion as regards the disposition of prizes that he may possibly win, Louis S. Ross, holder of the Sir Thomas Dewar trophy, will not go to Ormond this season. The Stanleys built a steam racer according to his plans and specifications and Ross was to drive it. Both are reported to desire the prizes that may be won, and neither will give way to the other, so Ross, who desires to retain his amateur standing and reputation, will be at the meet as a spectator and not as a participant.

Motorphobia Abroad—English motorists are exulting over a victory they recently gained in the courts. One of their cycling scouts who had given testimony in a case against a driver arrested for scorching was prosecuted by the police for perjury. The case came up before a motorphobist judge, who not only justified the police for setting traps, but also declared the evidence astonishing. The jury took a contrary view and discharged the scout. The defense introduced photographs to prove their case. Another case was against a man charged with driving to the common danger, the evidence consisting of the fact that 5 minutes after the car had passed the children from a neighboring school came on the road.

Clubs May Merge—The Austin Automobile Club is making overtures to the Oak Park Automobile Club looking to a merger of these two Chicago organizations.

Kiser Back—Earl Kiser, now in rugged health, although a cripple, has returned to Dayton, O., where he will start the Earl Kiser Auto Co., handling the Winton and Autocar, as soon as he can find a location.

Good Excuse—One of the causes for the bankruptcy of Ralph Dickerson, an English publisher, was given as "fined for furious driving on ten or twelve occasions, costing in all about $1,250 in penalties and costs."

Motor Skate—One of the novelties shown at the French show was a motor road skate. On a miniature four-wheeled chassis is attached a small gasoline motor. The device is fastened to the feet and for it is claimed 25 miles an hour on smooth roads. The motor is coupled direct to the back axle, which carries the driving wheels. The wearer of the skates directs his course by means of a small bogey on the front wheels and the gasoline tank is carried strapped around the waist of the operator. No way of stopping the motor, though, is given.

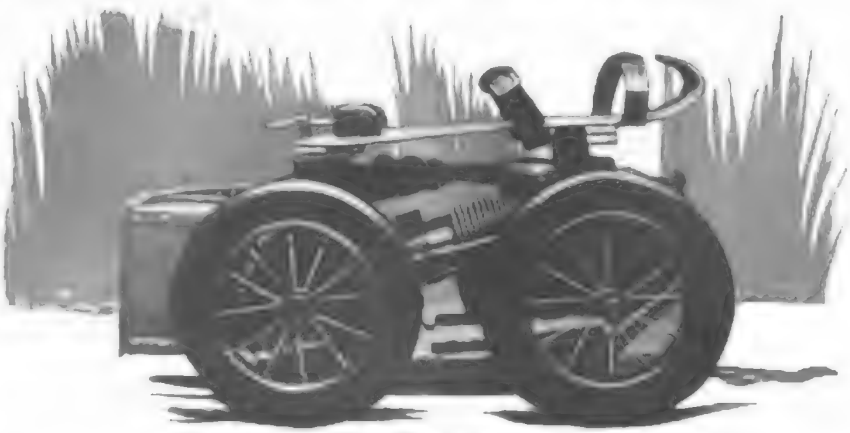
Real Actors—Barney Oldfield and Tom Cooper have temporarily abandoned their intention of entering vaudeville to become an important part of the Liebler production, "The Vanderbilt Cup," which is to be put on at the Broadway theater, New York City, beginning January 8, with Elsie James as the real star.

Dinsmore Car to Kaiser—Clarence Gray Dinsmore's big Mercedes racer is now the property of Emperor William of Germany, according to advices from Europe, which state the late patron of road racing left the machine to his friend, the kaiser, in his will, besides bequeathing $2,000 to the Herkomer tour.

Florida Parties—The Chicago Automobile Club is arranging a party to go to Florida for the Ormond meet, working in conjunction with the Minneapolis Automobile Club. The train will leave January 20. Detroit motorists will also have a special car which will leave New York over the Seaboard Air Line January 21.

Loaded With Coin—The National Cash Register Co., of Dayton, O., since it changed its system of paying its employes, dealing out the coin instead of checks, is using an automobile to transport the money from the bank to the office. On this weekly trip $55,000 is carried, two armed guards accompanying the messenger in the car from the bank.

Aid to Santa Claus—In Philadelphia there is a Santa Claus Association, an organization of women who annually, about Christmas time, make it their business to gather food, clothing and money from those more fortunately situated and distribute them among the deserving poor. This year the quantity of such supplies gathered was so great that its distribution during the week preceding Christmas day became a matter of much doubt. The difficulty was solved, however, by Managers A. E. Multby, of the local branch of the Winton Motor Carriage Co., and Percy Neel, of the Quaker City Automobile Co., each of whom placed several automobiles, with their operators, at the service of the charitable women with the result that by Sunday night every package of the veritable mountain of presents had been safely bestowed upon the numerous beneficiaries of the society by the women.



MOTOR SKATE FOR ROAD USE, INVENTED BY FRENCHMAN

Digitized by Google

WELCH TOURING CAR

40-45 HORSEPOWER

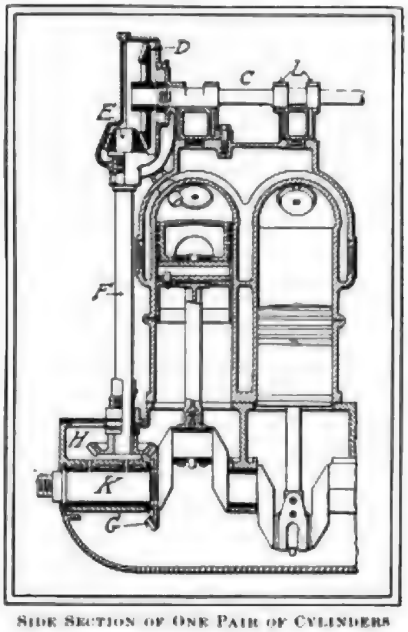
WELCH TOURING CAR, 40-45 HORSEPOWER
FOUR-CYLINDER MOTOR AND CLUTCH GEAR

MODEL D, the 40-45 horsepower four-cylinder 1906 car of the Welch Motor Car Co., Pontiac, Mich., caries most of the marks of distinction of the present machines, to which are added, however, a few of the recognized next year's designs, as well as other decided novelties. Notable among them is the placing of the water pump in the center of the radiator and having it take its supply from the top half of the radiator and deliver it to the bottom portion, from which it passes by individual pipes to each pair of cylinders. Later it passes through a similar pair of pipes from the cylinder pairs to the top portion of the radiator.

Nothing out of the ordinary exists in the running gear, but solid construction is used in every part of it. The pressed steel channel side sections are narrowed at the forward end alongside of the motor, the maximum depth of the channels in the middle of the side pieces is 4½ inches; frame cross pieces are riveted in place and reinforced by gusset plates. A set of semi-elliptic springs 40 inches long and 2¼ inches wide support the frame pieces in front and a pair of full elliptics of the same measurements carry the rear of the frame. The front axle is an I-section drop forging carrying the Elliott type of steering knuckles and the back axle is of typical live construction. The wheel base is 114 inches.

Novelty in the motor is found first in placing the valves in removable cages in the opposite sides of the cylinders, mounting them at 45 degrees to the vertical and operating them through an overhead camshaft and rocker arms. The rating of 40-45 horsepower is estimated on normal crankshaft speed. Conventional lines rule in the cylinders, which are cast in pairs with all parts, such as the heads and water jackets, made integral. Valve ports are not required. A little out of the ordinary, but not new with the Welch concern, is the arching inside of the tops of the cylinders, giving the combustion chambers a hemispherical shape. The crankcase is a two-part casting, the lower portion assisting only in carrying the oil bath. The duties of the top portion are to carry all of the five crankshaft bearings, as well as having four integral lugs through which the motor takes its support on the main frame pieces.

All the three moving portions within the cylinder, the crankshaft, connecting rods and pistons are carefully made. The crankshaft is machined down from a stamped blank of chrome nickel steel and to remove friction the bearings are ground to size. These, by the way, are of different lengths, the three intermediate ones being 1¾ inches in length, whereas the forward end one is 5¼ inches and the rear one 5 29-32 inches long. On the rear end of the shaft is a large flange to which the flywheel is bolted.



SIDE SECTION OF ONE PAIR OF CYLINDERS

Each connecting rod is an I-section drop forging fitted with bronze bushings to receive the hardened ground steel wrist pin which is pinned to the piston journal, but at its lower end exhibits construction not widely followed in motor cars. Instead of the usual connecting rod cap bolted and cotterpinned in position, the lower end of the connecting rod is arched out to receive the upper half of the bushing. The lower part of the bushing rests in a U-shaped metal stirrup, the ends of which span the lower part of the connecting rod and are attached thereto by a pair of bolts, in which provision for adjustment is included. This adjustment is made by having one bolt formed with a taper section near its ends where it passes through the stirrup arms. By tightening this bolt the halves of the bushing are brought closer together.

A slight cone effect is noticeable in the piston heads, the center of the head being the highest with a gentle slope to the sides. This shape, combined with the arched top of the cylinders, gives a peculiar-shaped combustion space. Four compression rings, all located above the wrist pin attachment, are used. They are pinned against rotation.

Valve disposition as well as movement can be studied from the sectional illustration of the motor, one of which shows an end section and the other a side section of one pair of cylinders. Both admission and exhaust valves have a diameter of 1¾ inches and are interchangeable and are retained in cages B that screw into the cylinder heads, the seats of the cages having a ground fit with the cylinder heads. Each valve A has its head and stem made integral, the former, as usual, beveled to 45 degrees and the latter working in a long removable guide within the cage. A heavy spiral valve spring surrounds the stem, the inner end resting on the cage proper and the outer end retained in a cup-shaped washer surrounding the stem and which is backed by a washer support and split washer

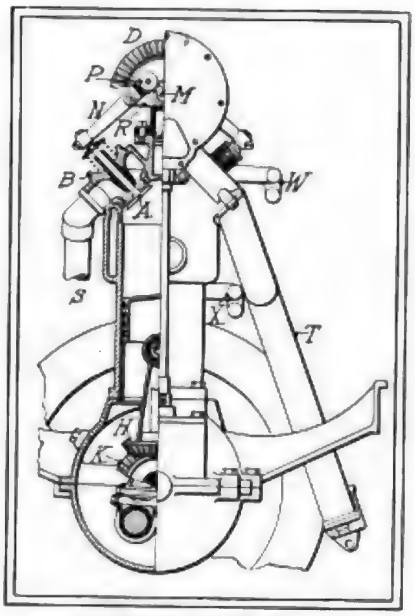
Digitized by Google

which fits in a groove cut in the end of the stem. The spring is of special wire.

Along the top of the motor is the horizontal cam rod C resting in a pair of supports L in each cylinder head and carrying between these supports cams M for operating the rocker arms N which are carried on short horizontal arms R in the cylinder heads. The ends of the rocker arms resting on the valve stems are suitably cup-shaped to receive the rounded ends of the stems. On the other ends are rollersP which bear upon the cams M. By pivoting the rocker arms close to the ends carrying the cam rollers, a good valve lift can be had without using too large cams on the overhead camshaft C. On the rear end of the camshaft is the large bevel D which meshes with a smaller bevel E on the top of the vertical shaft F. This shaft, in turn, takes its power from the crankshaft through the pair of bevels H and G. The lower bevels are entirely enclosed within the crankcase and as a consequence are lubricated from the splash, but the upper pair is enclosed within a housing supported by brackets to the end cylinder casting and is lubricated by an oil level. The inlet piping S is longer than usual, the carbureter being carried as low as the crank case. The exhaust pipes T form a series of easy steps from the front to the rear cylinder, the pipes being of large diameter and well removed from the cylinder walls.

Novelty is shown in the cooling scheme. The waterjackets enclose the cylinder heads and project down one-third of the piston stroke. The water pump is carried in a chamber in the center of the radiator and driven from the rear of the radiator by a broad belt Z the fan Y being on the same axis and driven by the same belt. The pump chamber is cylindrical, with an end plate at the back and a front cap through which it may be removed or repaired. The rotary part of the water pump is located between the removable cap and an internal flange around the circumference of the chamber. In the rear of the pump chamber is a large opening connecting with the top half of the radiator and through which the pump draws its supply. In the forward part of the pump chamber is a similar opening connecting with the lower half of the radiator. Water enters the rear compartment of the pump casing, and passes into the forward one where it receives its impetus from the propeller-bladed pump. Should the pump fail to work, the design is such that the water will circulate by thermo-syphon action. Should it be necessary to take the pump out it can be removed through the front opening and with the cap of the opening replaced the cooling system is as complete a circulating system as before. Behind the radiator is a propeller fan of standard lines.

In lubrication recourse is had to splash within the crankcase for supplying practically all of the motor-moving members with their share of lubricant. A central partition divides it into two compartments and through this compartment is an equalizer pipe placed about 2½ inches above the bottom of the case. When the car is running on level surfaces the oil will stand the same height in each half of the crankcase, but on ascending a grade part of the lubricant will flow through the pipe so as to



End Section Welch Motor

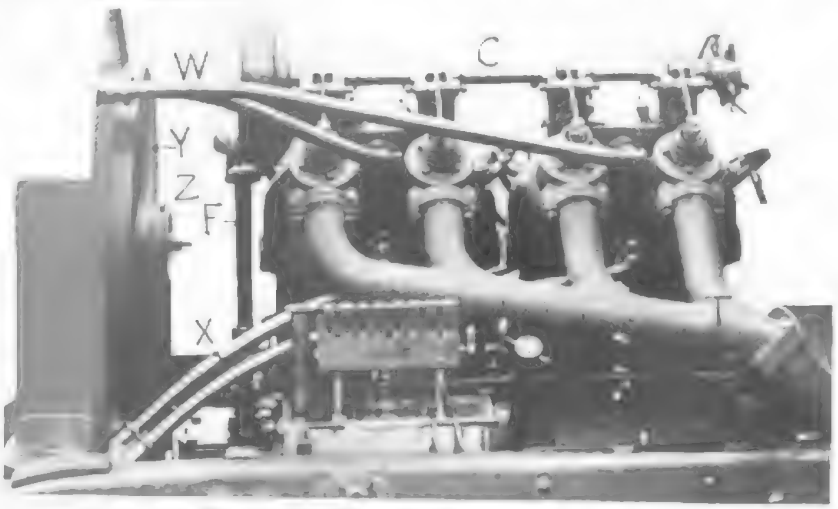
maintain a level in each compartment. In order to properly collect the splash each connecting rod at its lower end has its bearings fitted with little oil scoops which serve as collectors of the splash and from which the oil flows to the bearings. In the top of each crankpin bearings are other little troughs for collecting the oil from which oilways are drilled into the bearing. The lubricant, after passing through these bearings, flows into the crankcase, where it is used again. Provision is made for preventing the oil in the end bearings of the crankshaft working out through the bearings ends. To prevent this little oil stops are inserted. Each is a ring located in a groove cut in the motor bearings and from the bottom of the groove is a duct which conducts the oil to the crank chamber. The camshaft bearings on the top of the motor are cared for by wick oilers. Other bearings such as in the gear set have an oil bath.

Mixture is supplied from a Holley carbureter of 1906 design. Jump spark ignition is used. The spark plugs are placed angularly in the side of the arched cylinder heads and receive current from two sets of storage batteries, the current being commutated through a Leavit ball timer, located on the rear end of the camshaft. A four-vibrator coil is carried on the dash. Control of the spark and throttle is from the steering wheel.

Two forward speeds and one reverse are given by the gear set which is novel in many details. It is based on the individual clutch principle and gives direct drive on the high speed without a single gear revolving. The countershaft remains stationary. One of the novelties is that two types of clutches are used—two of the multiple disk type and one, a double clutch, of the positive jaw type. All gears used are of six pitch and made from drop forged blanks, which are cut to form and case hardened. Both shafts are nickel steel and run in bronze bearings, the pair of which on the countershaft have end caps which prevent lubricant working out of the case ends.

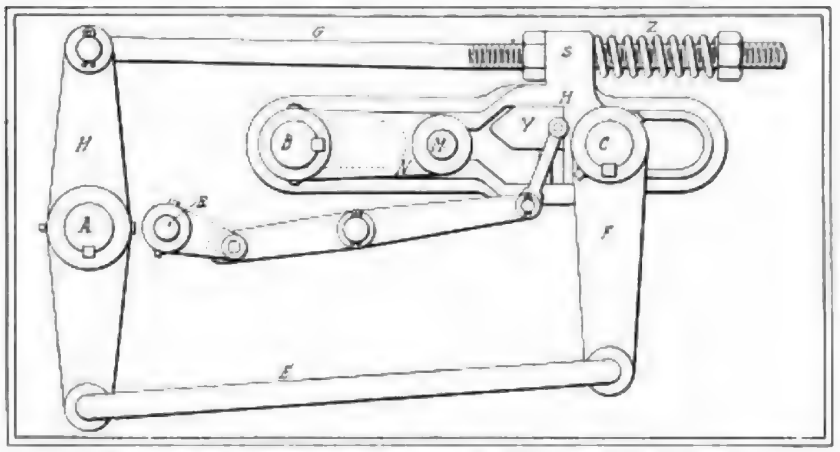
A shaft O connects by a Hockham joint with the crankshaft of the motor and another shaft A axially in line with it to the rear couples, through a cardan shaft and bevel gears, with the differential on the center of the rear axle. The forward end of the shaft A is hollowed from the rear end of the case to where it ends at the multiple disk clutch G. Within it is a bronze bushing which forms the rear end bearing of the shaft O. One half of the disks in the clutch G are fitted to a hexagional section of the shaft O and the other half are fitted to the shaft A so that pressing the two sets together will serve to lock the shafts O and A as one, which is done on direct drive. The method of pressing the disks is through a sliding collar K and a ring H screwed to the shaft and carrying cam levers H1. By sliding the collar K to the left the cam levers are separated, causing the cams to bear on the clutch disks, forcing them together and so locking shafts O and A as one.

To understand the other features of the gear set and how the other speed ahead and reverse speed are gained, it must be remembered that gears P, Q and S on the countershaft R are rigid with the shaft, revolving



Exhaust Side Welch 40-45 Horsepower Motor

Digitized by Google



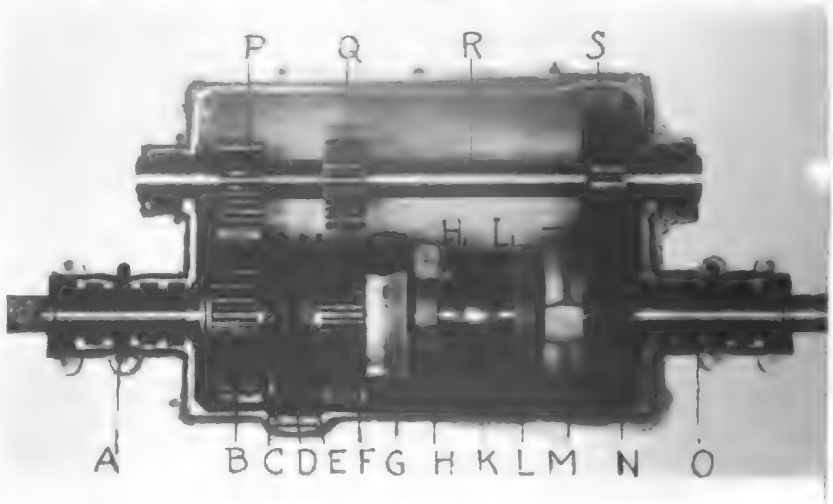
GEAR SHIFTING DEVICES FOR DOUBLE CLUTCHES IN WELCH GEAR SET

always when it does and vice versa. The three gears B, F and N are loose on the combined main shafts O and A so that as shown on direct drive the shafts can revolve and the gears remain stationary. Two clutches are made use of, M, a multiple disk one for locking the gear N to the shaft O, and another positive double-jaw one D, which is rigid with the shaft A and through which both gears B and F can be locked to the shaft A. In the clutch M one set of disks is fitted rigidly to the shaft O, being fitted to a hexagonal section of the shaft. The other set is fastened to a drum that also carries the gear N so that when the two sets of disks are pressed together through the sliding collar K being moved to the right and separating the levers L1 on the rings L which is screwed to the shaft A the gear N is locked to the shaft. For the second speed ahead two clutches are used, both operated through the same mechanisms. First the positive clutch D, rigid with the shaft A, is moved to the right and locked with the clutch teeth E on the rear side of the spur gear F. This locks this gear with the shaft A. After this is done the shifting mechanisms locks the gear N to the shaft O in the method before explained. Then the drive is from the shaft O through gears N and S to the countershaft R and from this shaft through the gears Q and E to the shaft A and to the rear axle by the shaft and bevels. It must be understood that the positive clutch D engages perfectly before the multiple disk clutch M locks the gear N to the shaft O. For reversing, an intermediate idler, not shown in the illustration, lies between the gears P and B and is constantly in mesh with both. In obtaining this speed the clutch D is moved to the rear, locking with the clutch teeth C on the forward side of the gear B and thereby locking this gear to the shaft A. After this is done the clutch M is used to lock gear N to the shaft O, when the drive is from shaft O through gears N and S to the countershaft, and from this shaft to shaft A through the gears P, the idler not shown and gear B. It will thus be noted that the clutch G is only used on direct drive, that on the other forward speed ahead and the reverse two clutches D and M are used in each.

The method of changing speeds is worthy of attention in that on all speeds, except the direct drive, two separate clutches have to be engaged, one a friction clutch making the gear N rigid with the shaft O from the engine, and the other the positive jaw clutch coupling either the gears B or F to the shaft A connecting with the rear axle. In all cases the positive clutch has to be

THE WELCH CAR

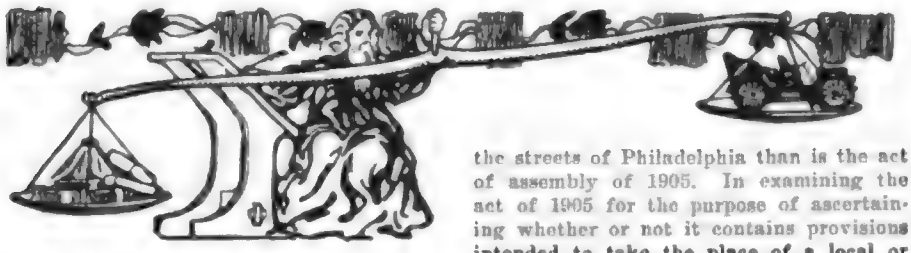
engaged first; in fact, it must be in perfect engagement before the friction clutch begins to operate. In accomplishing this an intricate shifting mechanism is resorted to. In the sectional view of it the gear-shifting lever at the driver's right is keyed to the end of the shaft A. To this shaft is also keyed the double arm lever H. The two shafts B and C enter the side of the gear case and on their inner ends carry yokes, the first one having a yoke fitting over the clutch D and the other one connecting with the sliding ring K, by which the two friction clutches are operated. It can be noted that the upper end of the lever H connects by rod G with a lug S on the camplate H and that the lower arm of the lever connects through the rod E with a short arm F that is keyed to the shaft C. The connection of the rod G and the lug S is not positive, but through the medium of the coiled spring Z which is held in tension by a nut at the other end of it. A horizontal lever arm N is secured at one end of the shaft B and the other end is furnished with a pin M which passes through an opening or slot in the camplate H. Within the slot is a block Y connecting through a link and lever with a shaft R so that by moving the block Y into its several different positions in the slot the form of cam slots which guides the pin M is naturally changed. The illustration shows it in the neutral position. Supposing the driver uses his change speed lever, taking the arm H to the left at the top and to the right at the bottom, or counter clockwise, the shaft C is partly rotated in the same direction. This shaft being above the gear shafts within the gear box, the forward friction clutch M is engaged. A similar movement of the shaft A through the arm G results in the shifting to the rear of the camplate H and with the block Y in the position shown a clocklike movement would be given to the pin M, with the result that the jaw clutch D would be shifted to the front and the gear F locked with the shaft A. With the gear N fast upon the shaft O and gear F fast to shaft A slow speed ahead is obtained. Should the block Y first have been put in its low position and the shaft A rotated to the rear, the pin M would have taken a different course and moved upward, the jaw clutch thereby locking the gear to the shaft, giving reverse speed. For direct drive the shaft A is rotated in the direction of the hands of a clock, the camplate H is moved to the right and arm N brought to a central position.



WELCH CLUTCH TYPE, TWO-SPEED AHEAD GEAR CASE

Digitized by Google

LEGAL LIGHTS AND SIDE LIGHTS



RULES AGAINST QUAKERS

To the surprise of Philadelphia automobilists, the injunction asked for by the Automobile Club of Philadelphia restraining the local authorities from enforcing the municipal ordinance providing for the purchase and display of license tags on motor cars, was refused by common pleas court No. 4, Judges Willson, Audenried and Carr on the bench. The automobilists' main point was that the local law on the subject will, on and after January 1, 1906, be abrogated by the act of assembly of April 19, 1905. The court, however, was of a different opinion.

The decision partook of the nature of a right hook to the solar plexus, but it did not result in a knock-out. The club's attorneys are preparing to carry the case to a higher court. In any event, they will put one of the members in the way of being pulled in on New Year's day for failing to observe the local ordinance, and will fight to the last ditch. It is also proposed to have a man arrested for refusing to comply with the provisions of the new state law.

As the law stands now any picayune community in the state may frame a more or less radical set of automobile regulations of its own—always with a liberal license fee and a heavy fine for non-observance—and compel a continuous performance in the tag-changing line as a touring party crosses the state. The possibilities which last Wednesday's decision open up are, indeed, too numerous to mention in detail; and the majority of local automobilists, especially those who dabble in the law, are wondering at what they consider the short-sightedness of the learned judges.

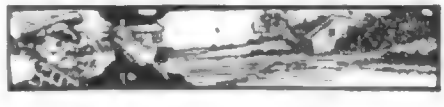
Many of the conclusions of the court appear to be too intricate for the lay mind to grasp. For instance, the opinion says: "It is, of course, beyond all question that, if the statute and the ordinance are inconsistent, or, if the statute can fairly be regarded as intended to supplant the ordinance, the latter must give way and the statute only have effect given to it. Paramount authority of the lawmaking power of the state over the lawmaking power of the city must be conceded. The question therefore comes down to this: Is there any necessary incompatibility between the statute and the ordinance, or does it sufficiently appear that the statute was intended to furnish the sole rule of conduct and regulation for the use of automobiles and similar vehicles?"

The court answers this question by saying the city had full power to pass the ordinance of 1902, and that that measure was better adapted to protect people using the streets of Philadelphia than is the act of assembly of 1905. In examining the act of 1905 for the purpose of ascertaining whether or not it contains provisions intended to take the place of a local or municipal regulation upon the same subject, the court says it may be noted in the first place that it contains no expression of an intention to that effect. The court was not impressed that, simply because the state had undertaken to impose certain regulations for automobiles operated in the commonwealth, such action excluded the right of a city to formulate and impose its own regulations. Reference is made to the fact that under the terms of the ordinance, the license to be obtained from the city is one which is based on certain examinations which the court does not regard as inconsistent with anything in the act. No satisfactory argument was presented against the right of the city to require guarantees from operators of automobiles additional to those required by the state.

The opinion then goes on to say that: "It has been argued that the act of 1905 was intended to provide that only one license number or tag shall appear upon the front and back of the vehicle when operated on the highways, but we do not regard this to be the proper construction of the act. It is provided that only one 'state license' number shall be carried upon the vehicle. There is no prohibition against the carrying of a license which was not a state license, and the limitation of the prohibition to a single class of licenses implies that it was not intended to exclude a local municipal license from being carried upon the vehicle. As to the word 'place' used in the act, the court does not regard the term as applying to a city or municipality within the commonwealth."

Laymen automobilists, when they heard this paragraph of the opinion read, looked at one another and seemed to say: "Now, wouldn't that jar you?" It was a little too finely drawn for them. As one of them said: "It sounds as if the court were hunting for pretexts for refusing the injunction. It seems to me that a contrary opinion could have been delivered without a resort to such intricate interpretations of the law."

Continuing, the opinion says: "It seems very plain that what was intended to be enacted by the clause just cited was that a foreign license number should be removed from any vehicle which comes from another territorial division outside of the state into the limits of the state. The language of the act—'while the vehicle is being used within this commonwealth'—the court construes as meaning that the vehicle in the mind of the legislature was one which came from outside of the limits of the state of Pennsylvania."



One legal motorist points out that the court seems to have lost sight of the fact that the act of 1905 was particularly designed to do away with the conflicting regulations of towns and cities by establishing a uniform law for the entire state. It is also claimed there is a straining after a possible interpretation of the reading of that act which may be construed as favoring a city's or a town's right to enforce automobile provisions of its own that is especially apparent in the closing paragraphs of the opinion, which read as follows:

"It may be argued that there is an incompatibility between the statute and the ordinance in the different provisions which are contained in the two with reference to the rates of speed at which an automobile may be driven. The statute provides that no person shall be allowed to operate such a vehicle above a certain maximum speed under certain conditions. The question might arise as to what is meant by the term 'allowed,' and as to who or what authority might allow the use or operation thereof. Perhaps it would not be straining the force of language to construe this provision as referring to the constituted authority having jurisdiction over highways in any particular district. Aside from this point, however, it must be noted that the legislature only prohibited the driving of automobiles or similar vehicles at a higher rate than the fixed maximum speed. It did not state that they might be driven at that rate, except by implication, and that implication may be regarded as having been overcome by the further provision that the prohibition against exceeding a certain maximum rate should not be construed as permitting any person to drive an automobile at a greater speed than is reasonable.

"It does not seem to us that this restriction of the force of the provision regulating the rate of speed should be regarded as applicable only to a particular case, where the question of the reasonableness of the speed might come before a jury, say, in an action for negligence. In the absence of any prohibition against local legislation it would rather seem that the legislature intended that the local authorities having jurisdiction over such a class of subjects, and having special knowledge of the conditions of their own localities, might by ordinance determine what should be a reasonable rate of speed.

"This we believe to be a permissible construction of the statute before us, and we believe that such a construction will best promote the interests of the various communities of the commonwealth composed of people living in closely-built towns and cities, and that no unreasonable restrictions are thereby placed upon people who desire to make use of the modern horseless vehicles, with due regard to the rights of others.

"We are unable to find in other portions of the act of 1905 anything which conflicts with the ordinance of 1902, and in view of what we have already stated we have reached the conclusion that the injunction prayed for by the Automobile Club of Philadelphia must be refused."

Digitized by Google

IN THE COMMERCIAL CAR FIELD

IROQUOIS GASOLINE STAGE COACH

BUILDING to the order of the promoters of a stage route in the state of Utah to connect a railroad terminus with settlements in the Uintah Indian reservation, the Iroquois Iron Works, of Buffalo, has turned out a machine which it thinks hits the nail on the head. It aimed to bring out a car that has power and durability to carry a sufficient load at a speed to mechanically meet transportation requirements and at the same time operate with a minimum amount of maintenance expense to insure its mechanical success. One of these models has been running on a government mail route in Utah and has apparently filled the bill. The chassis is so constructed that it will take any one of four bodies—stage, omnibus, van or platform truck. It is of heavy construction, this chassis, the main frame being of continuous 5-inch channel steel, with all the curves forged, and mounted on extra-long elliptic springs 3 inches wide. To the chassis are attached 36-inch wheels, fitted with 5-inch solid tires on the rear and 4½-inch on the front. There is a four-cylinder motor made of individual castings, with a 6-inch bore and a 6-inch stroke, developing 55-horsepower at 800 revolutions per minute, crank speed. There is sliding gear transmission, with three speeds forward and a reverse, the rear gears being cut from chrome nickel steel, 1¾-inch face and No. 5 pitch, stub length. There is a differential on the jackshaft, while the solid rear axle is fitted with 2-inch Timken roller bearings. The new model of the Whitney chain, with 1½-inch pitch, is used. The Remy type H high-tension magneto furnishes the ignition. The car weighs 7,500 pounds.

In the speed line the car is designed to go at an average pace of 15 miles an hour, but it can be sent along at 22 miles. The maker, however, believes when it is being used commercially that it should not be operated above 18 miles an hour. The seats on the stage are wide and built to accommodate four passengers on the three rear ones, although five can travel there without any more crowding than is customary on a horse-driven stage. Two can ride in the front seat. With the full load on the weight is 11,000 pounds.

The machine is well designed for the use intended. The seats in addition to having good width so as not to crowd the passengers are made with ample foot room—a prime essential in stage traveling. Heavy upholstering is used in the seats and backs making traveling as comfortable as in a railroad coach and the canopy top provided is not only a protection against the scorching rays of Sol in the summer months but is a good preventive in autumn and winter days repelling with similar success the driving rains and winter winds.

PLAN TRACKLESS TROLLEY

Detailed plans of the cost and construction of a trackless trolley line across the bridge from Detroit, Mich., to Belle Isle have been taken up by the Detroit council committee on parks and boulevards. According to the estimates submitted the system would cost somewhere in the neighborhood of $51,925. It is figured that at a fare of 2 cents for delivering passengers either at the casino or aquarium the system would pay for itself within a few years. The American Electromobile Co. has submitted details of trackless trolley cars which are capable of seating forty persons each, and which it could supply under the proposed system. A proposition for a regular trolley line has also been submitted, but the aldermen oppose the laying of tracks and this will do away with any consideration for such a plan. Three other companies, including two in New York, are waiting to bid on the contract. The other waiting bidder is the Commercial Motor Vehicle Co., of Detroit. A full meeting of the council will undoubtedly be called to consult on the proposition and it is more than likely that Detroit will have a first class trackless trolley system in operation in 1906.

AGRICULTURAL MOTORS

The secretary of agriculture is manifesting considerable interest in a report recently to hand from Hull, England, regarding an experiment in applying motor power to farm work, as he believes the plan would be a good one for small farmers who cannot use agricultural machinery and motive power on a large scale profitably. From the account that has been received it seems that a party near Hull has been conducting some experiments in regard to the use of alcohol on the Ivel agricultural motor. Some months ago this party was able to arrange a simple attachment whereby paraffin could be utilized for the running of the motor, which was originally designed for gasoline, and was able to secure satisfactory results—that is to say, it was found possible either to start up on gasoline and after 5 minutes' running to turn on kerosene and run on the same for the rest of the day, or in case it is impossible to obtain gasoline it is possible to start up in paraffin and run on continuously. This is accomplished without the slightest trouble in regard to sticking of the valves or fouling of the engine, so it is said.

One of the most important points in connection with motors for agricultural purposes is the fact that they should run cheaply, that the upkeep should be small, and the running expense light. Therefore the question of fuel consumption and the cost of same is very important. Gasoline at the present time is somewhat expensive. It is easy for a wealthy owner of a car used for pleasure purposes to buy gaso-

THE IVEL AGRICULTURAL MOTOR DOING NIGHT WORK IN ENGLAND

Digitized by Google

line without feeling in any way that it is a burden to his pocket. At the same time, to the agriculturist using his machine only to help him with his work, the expenditure is an important one. Therefore the first step taken in the experiment under consideration was the utilization of kerosene, which can be obtained at half the price of gasoline. This shows a decrease in the running expenditure of half for fuel, and at the same time does not carry with it the many risks which are bound to occur through the storing and handling of gasoline.

Kerosene is a clean spirit to handle, and has many other advantages. Therefore, following up the experiments, alcohol was used for the third fuel test, and it may be said the same was attended with most successful results; the same machine with the same carbureter, with a very small attachment, and with no alteration to it making it different from what it was when running in gasoline, gave nearly the power and the same pulling results. The consumption was practically the same, and the party making the experiments felt elated over having carried out experiments so successfully on a fuel which has up to the present time baffled many motor engineers in so far as its successful use is concerned. The following results have been achieved with the three fuels, running the same machine on the same oil, and, in fact, the experiments were carried out on the same day: With 2 gallons of gasoline, 3 roods of land were plowed; with 2 gallons of kerosene 2 roods 35 poles were plowed; with 2 gallons of alcohol 2 roods 25 poles were plowed.

NEW OHIO CONCERN

The Commercial Motor Truck Co., of Toledo, O., has purchased a site at Plymouth, O., and has started the erection of a new plant, which will be built on the unit system. The first building to be erected will be of brick construction two stories high, 100 feet long and 64 feet wide. The company was incorporated October 17 under the provisions of the laws of Ohio, the capital stock being $40,000. The new concern has been fully financed. A temporary plant will be maintained at Toledo until the new plant at Plymouth is completed. This will enable the concern to meet the demand for the new truck, a number of orders having already been secured. The model of the truck to be manufactured by the company was completed about 7 months ago. Since then it has been in constant use, being subjected to numerous tests. The accompanying illustration shows the truck climbing a 10 per cent grade with a load of 10,050 pounds of sugar. The design of the new model is the work of Fred C. Avery, formerly superintendent for the Chicago Motor Vehicle Co. Mr. Avery will be superintendent of the new plant at Plymouth. The office of the company for the present is at 805 Spitzer building, Toledo. Charles A. Keller is president of the concern. The first annual meeting of the company will be held on Tuesday, January 9, at which time the annual election of officers will be held. The company will employ about fifty men to start, but anticipates soon increasing this force, as well as adding to the buildings which are used for the factory.

ONCE AN ENEMY—NOW A FRIEND

During the past week Major Higginson, president of the Safe Roads Association of Massachusetts, who heretofore has been one of the strongest opponents of motorists, has come out in a new garb. In his annual report to his association he makes the flat-footed statement that the laws now on the books of the commonwealth which govern the use of motor vehicles are all wrong; that they produce a condition of affairs which prevents their being recognized by even the best disposed motorists, and that they should be revamped so that motorists will have a fair opportunity under the same. He believes it is not possible for a motorist to drive without breaking the law under the existing conditions, and virtually recommends the laws governing the use of motor vehicles be given over to the Massachusetts highway commissioners. The latter, however, do not desire to assume any such responsibility. Nevertheless that is the main idea of the Higginson report, which further advances the idea that the commission should establish a rate of speeds in different locations according to the road conditions thereabouts. He believes in the erection of sign boards announcing the speed limit in every section, and it is safe to say that in the future he will be a strong friend rather than an enemy to the motorists. The association of which he is president is the one which established the traps at Manchester during the past 2 years, the association which produced the famous Peabody, the man who went to New York to demonstrate to the officials there what was the best and most effective manner of disposing of the speed merchants. While his course thus far has been decidedly against the motor car, the fact that he denounces the state laws and other acts is all the more forcible, as he has had an opportunity to study the evil tendencies of present conditions and foresees others that are good and which should be adopted.

During 2½ months more than 10,000 automobiles were timed on 62 days, as follows:

	Miles an hour				
	15 or less	15-20	20-25	Over 25	T'tal
July, 18 days..	885	882	86	3	1856
Aug., 22 days..	2022	3028	204	11	5265
Sept., 22 days..	1234	1660	170	1	3065
Total's	4141	5570	460	15	10,186

Stated in percentage the result is as follows:

	Miles an hour			
	15 or less	15-20	20-25	Over 25
July	27 3/5%	47½%	4¾%	1-6%
August	38½	57½	3 2-5	1-5
September	40¼	54 1-6	5½	3-100
Whole 62 days	40⅖	54⅗	4½	1-6

The foregoing figures are taken from the timers' note books. The number of automobiles going faster than 20 miles an hour include several which the timers did not notify the police officers to stop, because the time was nearer 20 miles an hour than it was to the second or half-second next below the point of time at which 20 miles an hour was indicated. In other words, the speed was so little in excess of 20 miles an hour that it was disregarded.

There were also several that the police officers failed to stop, either because there were too many at once and he could not stop them all, or because they turned off the highway before they had reached him, or because they refused to stop. Sometimes, too, the wires were out of order, and it was impossible to communicate with the police officer.

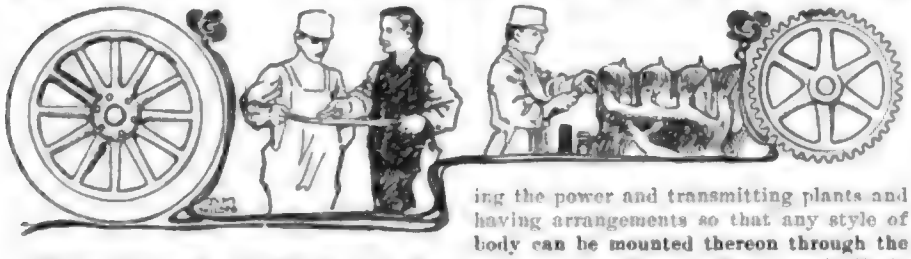
The notebooks of the police show the following:

	Stopped	Refused to Stop
July	78	0
August	170	3
September	159	4
Total	407	7

After discussing the problems of unlicensed drivers and of machines registered in other states, the report outlines the method of bringing cases before the highway commission and its action thereon in general and specific cases.

COMMERCIAL MOTOR TRUCK CO.'S WAGON

Current Automobile Patents



Friction Drive—No. 807,623, dated December 19; to John W. Lambert, of Anderson, Ind.—In his friction drive automobile the inventor has a friction disk A on the rear end of the crankshaft and against the face of this disk is brought to bear the periphery of a friction wheel B, carried on a crossshaft on the frame. The wheel B is slidable on its shaft and on the ends of the shaft are sprockets for double chain drive. The feature of the invention is in the pivoting of the bearings C on the crossshaft so that when desired the driver can force the friction wheel B against the disk A with such force as to make positive contact for driving either ahead or reversing. The bearings are carried from the side pieces of the main frame by a pair of depending arms, one at the front and the other at the rear of the bearings. The bottom of the front bracket connects through the rod D with a pedal F in the car floor and the bottom of the rear bracket connects through the radius rod H with the rear axle. By pivoting both rear springs at their tops on a stub axle G the rear axle is carried bodily forward whenever the shaft C and its friction wheel B is carried forward to give positive drive. When in its forward position the rear springs are slightly tilted, but the main frame side pieces remain horizontal throughout.

Novel Frame Design—807,958, dated December 19; to Ransom E. Olds, of Lansing, Mich.—The frame design illustrated is suitable for single-cylinder runabouts or small cars in which a one or two single vertical motor is carried in front. In the frame work the forward axle A is of conventional lines with typical steering knuckles, and mounted on the center of it is the forward portion of a tubular framework for supporting the motor and transmitting parts of the machine and connecting the axles. This frame consists of three portions. One a quadrilateral near the front axle with the front cross piece D connected with the axle, its two side tubular parts C made parallel and the rear member E connected by unions at the corners with the side pieces. From this rectangular part, in the center of which is the motor and gear case carried thereon by lugs, two diverging side pieces P extend rearwardly to the ends of the back axle, where they are united by a tubular cross piece B, which forms the axle casing and encloses within it the drive shafts to the rear wheels. Drive from the motor is by shaft, which is enclosed in the housing F, this housing being positively connected with the cross piece E as well as the axle housing B, so that the entire frame work and the front and rear axle is a compact support carrying the power and transmitting plants and having arrangements so that any style of body can be mounted thereon through the medium of either full or semi-elliptic springs. The rear spring supports are shown in dotted lines inside of the rear springs.

Friction Drive Railroad Car—No. 807,627, dated December 19; to George W. Marble, of Chicago.—This inventor comes forward with a method of friction drive suitable for use on light railroad cars, such as used by section repair gangs, section inspectors, or special road men. A two-cylinder opposed air-cooled motor is carried crosswise in the center of the car, and connected through a friction wheel on a continuation of its shaft with a pair of large friction disks, placed on opposite sides of the friction wheel and one of which is adapted for driving the machine ahead and the other for reversing at the same speed. The merit of the invention consists in this last feature, that of reversing at the same speed as when traveling ahead, a feature particularly important in railroad work. Through a pair of levers the two friction disks are moved simultaneously, one towards the friction wheel and the other from it, for going ahead and in the opposite directions when reversing.

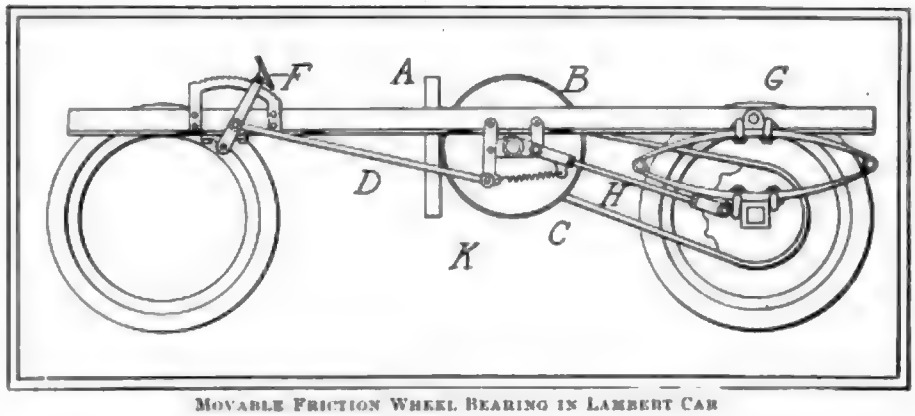
Triangular Drive—No. 807,457, dated December 19; to Benjamin A. Gramm, of Chillicothe, O.—This drive is for automobiles designed for connection between the gear box and the rear axle through a cardan shaft. The forward end of the shaft takes its bearing in the front of a triangle, the sides of which are a pair of diverging support arms running from a cross piece of the frame to the side pieces. The forward ends of these arms are held together by a bracket through which passes the front end of the cardan shaft. The rear end of the shaft has its bearing box supported beneath a cross piece of the frame. The inventor hopes by his design to get a shaft drive in which the shaft is quickly put in place and just as quickly removable.

Combined Differential and Gear Case Set—No. 807,771, dated December 19; to I. H. Pleuharp, Columbus, O.—In the invention, the differential enclosed within the rear axle has a pair of bevels, one with a single gear face and the other with two bevel faces, one of large diameter and the other considerably smaller. Between these bevels are two bevel pinions on the end of the cardan shaft. One of the cardan shaft bevels is made to mesh with the large bevel set on one of the differential bevels and also with the bevel on the other differential gear and another pinion on this cardan shaft is made to mesh only with the smaller gear face on the double differential bevel. All of these bevels both on the cardan shaft and the differential are secured to their respective shafts through the use of friction clutches operated through a lever close to the driver. When traveling on either of the two speeds ahead the bevels on the double differential are in use and in reversing the opposite single face differential gear is brought into use. The gear set gives only two speeds ahead and one reverse.

Semi-Pneumatic Tire—No. 807,748, dated December 19; to G. Knadler, Akron, O.—The tire described is to all appearances a solid one, held to the wheel by side flanges on the rim and cross bolts passing through the flanges and piercing the bottom part of the tire. The tire, however, is not solid, but carries a small circular air chamber in the center, the diameter of the chamber not being more than one-third of the diameter of the tire. A valve is not used for inflating this air chamber but the base of the tire is split and the air within it held only at atmospheric pressure when the tire is cold, but which of course increases with constant running. When the temperature increases the air within the chamber cannot escape because of the flanges and cross bolts holding the edges of the slit firmly together and forming, in short, an air-tight union.

Speed Controller—No. 802,540, dated October 24; to George A. West, of West Buffalo, N. Y. The device is for controlling the speed of gasoline engines. A governor is on the camshaft and to the governor weight is attached the outer end of a coil spring, the inner end being connected with a cam working on the valve stem, so that with high speeds the cam position is altered.

Protected Steering Wheels—No. 807,689, dated December 19; to Z. T. Sweeney, Columbus, Ind.—Over each front wheel the



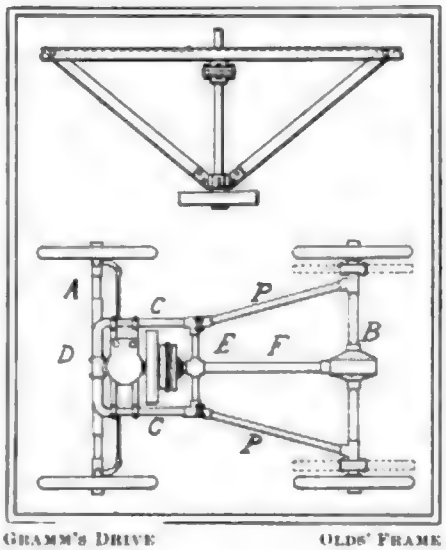
MOVABLE FRICTION WHEEL BEARING IN LAMBERT CAR

Digitized by Google

inventor places a hood device not unlike a wheel fender with the sides enclosed and covering the upper front half instead of the upper rear half of the wheel. In the forward part of this hood is mounted a wheel on a vertical axis. The wheel's diameter is perhaps 10 inches, not much greater than the width of the hood. The use of it consists in that should the road wheel approach an obstruction the hood and wheel will serve to either push the obstruction aside out of the reach of the tire or else the car will be thrust aside and perhaps saved the damage that might otherwise be encountered.

Tonneau Foot Rests—No. 807,831, dated December 19; to R. A. Leslie, of Cleveland, O.—The invention is a folding foot rest for use in the tonneau of large touring cars, in which the base of the front seats are too far removed from the front of the rear seat to serve for such. The foot rest is an inclined board extending across the tonneau floor at convenient distance from the rear seat and at such an angle as to afford a comfortable rest. This rest when not in use folds up in rear of the front seats, where it is entirely obscured and not in the least in the way. This swinging is accomplished by hinging to the rear base of the front seat a pair of brackets and connecting the other ends of the brackets with the ends of the rest so that the folding movement is complete.

Compound Pneumatic Tire—No. 807,537, dated December 19; to E. M. Birdsall, Buffalo.—In his pneumatic tire the inventor instead of using a common air chamber uses one which is divided into a number of sections, each with a diameter equal to that of the common air



GRAMM'S DRIVE OLDS' FRAME

chamber but in length not more than one-eighth of the wheel's circumference. Between the adjacent air chamber is a connecting passage partly filled with an expansible material so that in case one section of the tire becomes punctured the air would be prevented flowing from other sections into it and so deflating the entire tire. In inflating each part is inflated from a common valve, sufficient pressure being used to overcome the expansible connection between the different chambers.

Friction Sliding Gear—No. 805,978, dated November 28; to Albert C. Menges, Grand Rapids, Mich.—The inventor's transmission is of the sliding gear type, with a sliding unit consisting of three gears on the main shaft and corresponding gears keyed to the countershaft. Instead of driving them from the main to the countershaft through spur gears, friction wheels with beveled faces are used. These friction wheels are brought together for driving on low speeds and separated on direct drive so that on the latter only the main shaft is revolving.

Sand Device for Automobiles—No. 807,186, dated December 12; to A. L. Moss, Sandusky, O.—The invention is a device for laying sand on a road in front of the driving wheels of an automobile so that the wheels may secure sufficient friction to propel the machine. Five parts enter into the construction of the sand device: A sand reservoir with separate pipes, each with a spraying end leading to in front of the driving wheels, an air pump for furnishing air pressure for carrying the sand from the reservoir to the road, an air reservoir filled from the pump and a pair of working valves, one for controlling the sand outlet and another for the air outlet from the reservoir. The air pump is driven from the motor of the machine and can be thrown into gear at any time.

Spring Tire Lugs—No. 807,351, dated December 12; to J. H. Bleoo, New York city—Instead of having the casing of his tire composed exclusively of fiber and rubber the inventor places series of springs in the fabric, one series overlapping the other. The outer ends of the springs are bent and extend into the tire lugs, thereby holding the lugs in place without having a portion of the air chamber between them in order to retain them in position.

THE READERS' CLEARING HOUSE

SHOWS UP EVANSTON

Oconomowoc, Wis.—Editor MOTOR AGE—There is more intolerance and hypocrisy in the city of Evanston than there is tyranny in St. Petersburg. If the ways of courts and police in Evanston were universal in our country the liberty of law-abiding citizens would be less than that which is begrudgingly given to the serfs of Russia. Automobilists are arrested in Evanston for daring to be seen driving their machines within the limits of the city. A short time ago I drove an automobile from Oconomowoc to Chicago. Returning through Evanston alone I took great pains to drive carefully and slowly, for I had heard about the way the police arrested automobilists who were driving their cars with due caution and care. I was on a street called Ridge avenue. The roadbed is smooth, the street is straight and wide, is not in the business part of the city, and, when I was driving along over its smooth bed, not a team or a human being was anywhere within sight on the street. Suddenly a policeman stood in front of me and raised his hand. He was very near me, not more than 20 feet distant, but so slowly was my car going the policeman was in no danger. I stopped in 10 feet. I had no thought that I was to be charged with fast driving or that I was arrested. I asked the policeman what he wanted. He said nothing, but looked behind me. Just then came from behind a boy riding a bicycle. He spoke some words in a low tone to the policeman, who then began to apologize for his request that I "go to see the judge." The policeman well knew that I had not been driving recklessly or fast, and he showed so much regret that he must take me to the judge that I concluded he well understood I would be convicted, regardless of the real circumstances. The boy bicyclist swore that he, upon his wheel, followed me as I drove my machine; that he had an instrument called a speed-indicator upon his bicycle, and that the instrument indicated that his bicycle was going at the rate of 18 miles an hour. The boy did not swear that *he* knew I was driving fast, but that the little machine, which was not in court, not examined or cross-examined, or tested, as he read it, and as he told it, showed his wheel was traveling at that rate. The policeman refused to testify that I was driving fast, but in answer to my request that he state whether my car was going at a high speed, he said: "I had no means to judge. I cannot say." I had left the Palmer house in Chicago in my machine and had driven at an even speed all the way, passing many policemen and was just 1 hour and 15 minutes reaching the spot on that deserted street where I was held up by order of that boy who had a speed-indicator to play with. With true Dogberian wisdom the justice, who acted as judge and prosecuting attorney, held me guilty and fined me $15 and costs. I was not permitted to have an officer go with me to the residence of a friend in Evanston, was not permitted to leave the station, but was held there a prisoner, like a common thief, until by telephone I succeeded in getting word to the wife of an Evanston friend, and she came and signed an appeal bond with me. No automobilist being arrested in Evanston should pay a fine. Let every one appeal. Fining automobilists is a rich business if they all pay. We are strong enough now to fight. Why should we pay fines unjustly levied against us? The newspapers are more to blame than all other causes for the vindictive arrests of automobilists. Witness that motorphobist, the Chicago Tribune. It denounces the whole class for the sins of a very few, but it never has been known to condemn the outrages perpetrated by police and constables and justice courts against law-abiding citizens who happen to ride in automobiles.—GEORGE F. WESTOVER.

CYLINDER WALL THICKNESS

Vandergrift, Pa.—Editor MOTOR AGE—Will you kindly advise me through the Readers' Clearing House how thick the walls of a cylinder of 4½-inch bore and 6-inch stroke should be on a gas engine to be run at 900 revolutions per minute?—J. M. W.

If the grade of iron is good the cylinder walls should be about 7/32-inch thick.

Digitized by Google

Among Makers and Dealers

FACTORY OF THE REO MOTOR CAR CO. AT LANSING, MICH.

Glide Branch in Des Moines—The Bartholomew Co. has decided to open a Glide branch in Des Moines and will place S. W. Leonard in charge.

Reo Plant—Despite the fact that it has been in its new factory for a season the Reo Motor Car Co., of Lansing, Mich., is already finding itself crowded. The plant is an extensive one and convenient to the railroad.

Bigger Factory—The Standard Roller Bearing Co. has just started the erection of a brass and iron foundry, 60 by 125 feet, two stories in height. Its crucible steel casting plant started in operation last week, the size of this building being 60 by 95 feet.

To Help Kirkham—At a meeting of the stockholders of the Kirkham Motor Co., of Bath, N. Y., held recently, M. E. Shannon and Talcott W. Gould were selected from the stockholders to share the management of the company for the next 6 months with Charles Kirkham, the inventor of the motor.

May Patch Up Breach—A new application to have the Simplicities Auto Co., of Boston, thrown into the hands of a receiver has been filed with the supreme court. The company is not insolvent, but there is reported to be a serious disagreement among the partners and the stockholders. It is probable, though, that an agreement will be reached and a receivership avoided.

Columbia's Testing Crew—The testing crew of the Electric Vehicle Co. at the Hartford factory numbers a large crowd in the busy season. With the work of assembly just starting in on big lines the testing force is being enlarged from time to time, but the men pictured above number what is known as the old guard. Bert Holcomb, the long-distance road driver, is behind the wheel and at his side sits Pop Lull, one of the first men to drive a car professionally. Larry Duffie, who is boss of all Columbia testers, is the undersized man who sits on the battery box on the running board. With him are Fred Wright and Cap Townsend. Gene Mertens stands at the right, while the left position is held up by Pete Ballou, who has driven cars in all parts of America. Every car made in the Columbia factory is tested from 200 to 1,000 miles by these men.

Goes to Sharon—The American Tri-Motor Co. will erect a plant at Sharon, Pa., for the manufacture of automobiles, and will be capitalized at $500,000, it is reported.

Still Growing—For the third time this year the Du Brie Motor Co., of Detroit, has been forced to increase its capacity. The installation of more machinery will enable the company to turn out ten engines per day.

French Hustle—Lacoste & Battman, makers of the French runabout of that name, accomplished a novel feat recently. They took the parts of an 8-horsepower single-cylinder car and at a signal started workmen assembling the car. In exactly 3 hours 48 minutes later the machine was ready for service. Twelve minutes later M. Lacoste hopped in the car and drove from Paris to Bordeaux and back, covering the 750 miles in 61 hours 29 minutes, despite heavy roads.

In New Quarters—The Continental Caoutchouc Co. is now located in its new quarters at 43 Warren street, New York. The place consists of a double store front extending back 75 feet. The ground floor is used for offices and the first and second basements for stock and repair departments. The company has also opened branches in Boston, Buffalo and Cleveland.

In Trouble—Otto M. Knoblock and Frank Hoffman have been appointed joint receivers of the Charles A. Kaestner Mfg. Co., of South Bend, Ind., by the circuit court. They are to take care of all the property, machinery and equipment of the company. According to the complaint, which was filed by the St. Joseph Loan & Trust Co., of South Bend, the institution is in a bad way financially. The complaint recites that the Kaestner company is indebted to the trust company in the sum of $13,000. The plaintiff says the defendant company has machinery and equipment of considerable value, which should be taken care of, as the company ceased doing business last Friday. The machinery is estimated to be worth about $15,000. The company made automobile engines and automobiles and automobile parts in the plant of the Miller-Knoblock Electric Co.

Jay Locates—After a long search Webb Jay, Chicago manager for the White branch, has found a location and after the first of the year will be at 240 Michigan avenue.

Receiver Named—Justice Amend, of the supreme court, has appointed Rudolph A. Seligman receiver for the Pioneer Automobile Campus Motor Co. of New York. Suit was brought by the National Battery Co., a judgment creditor for $366.

Takes on Foreign Tire—The Harbourg Tire Co., of New York, has been organized to import and sell the Harbourg-Vien tire, made in Austria. It is announced that the New York Motor Co. was to have the selling agency, but this was denied by the latter concern.

Decauville Auxiliaries—Among the recent incorporations are several subsidiary companies to the Decauville Automobile Co. These are the Gaulois Tire Co., the Dac Supply Co., the Franklin Agency Co. and the Birdsall Mfg. Co., all of which are capitalized at $500.

New Idea—The Mechanical Advisory Board has been incorporated at Chillicothe, O., with a capital stock of $25,000, with the idea of giving expert opinion to inventors before they apply for patents, whether it can be manufactured at a profit and whether when manufactured it will be of use. The officers are: B. A. Gramm, president; B. W. Twyman, vice-president; Fred Biszantz, secretary and treasurer; Charles Elliott, chief engineer, and C. K. Probst, chief draughtsman. Mr. Gramm is manager of the Logan Construction Co.

Stanley Racer—The Stanley steam racer built for Ross for use at Ormond has a low-hung, beetle-shaped body, the frame only clearing the ground by 10½ inches. The body is made of whitewood and ash glued together and the turtle-back is a wooden framework covered with canvas. Only one engine is used, the burner being 30 inches and the boiler 10 inches more in diameter than the one on the large touring cars. The engine is set away aft and just ahead of it is the boiler. The driver sits directly ahead of this. A Stanley runabout and a touring car will also be sent south.

Tire Competition—The Pennsylvania Rubber Co. announces a tire economy test for $1,000 in cash to the owners and chauffeurs who go through the year on Pennsylvania clincher tires with the least tire expense per running mile. The first prize is $500. The conditions state that competitors may enter cars at any time during the year, but cannot hand in their records before the end of December. The car must have traveled not less than 2,500 miles during the year. The distance traveled must be measured by an accurate odometer. No bands or protective devices of any kind may be used on the tires, except that one band, covering not more than 12 inches of the tread, may be used temporarily if necessary on account of any injury to the tire. Repairs must be charged at the rates charged by the company, and all repairs must be reported in detail at the close of the year. Each competitor must notify the company of

Digitized by Google

his intention of entering the competition and must give the number of miles registered by his odometer at the time of entering.

Bailey Connects—Fred T. Bailey, an associate of Oldfield on the grand circuit, has been made sales manager of the automobile department of the Harris Oil Co., of Providence.

New Western Factory—The Hornecker Motor Mfg. Co. is building a plant at Whiting, Ind., to manufacture motor cycles with side attachments for carrying passengers. Prominent Whiting and Chicago men are interested in the enterprise.

Miller's Branches—Charles E. Miller, of New York, manufacturer and jobber of sundries, has arranged for the establishment of branch houses at Detroit and Buffalo, in addition to those already running at Philadelphia, Cleveland and Boston.

Factory in Evansville—The Windsor Automobile Co., recently incorporated under the laws of South Dakota and licensed to operate in Indiana, has located its factory at Evansville, Ind., W. M. Copeland being treasurer of the concern instead of Indiana agent as reported.

Chicago Movements—R. P. Rice, formerly of the Holmes-Schmidt company, has been made assistant manager of the Chicago Ford branch. A. J. Nicolet has been placed in charge of the stockyards branch of Ralph Temple, and F. L. Kimball has gone with the McDuffee Automobile Co.

Badgers Busy—The Auto Rapid Transit Co. has been organized at La Crosse, Wis., with a capital stock of $25,000. The company will start a rapid delivery system in the city, a passenger service between the south and north sides, and will also conduct a renting and livery business. Plans are being drawn for the erection of a fireproof garage. The officers and directors are A. J. Stephenson, president; W. J. Brayton, secretary, and Phillip McMahan, treasurer.

Adland Garage in Chicago—The Adland Motor Co., Chicago agent for the Lambert friction drive car, is building a garage at 900-902 West Madison street. This location is a convenient one for west side motorists, being but a few steps removed from Oakley, Washington and Jackson boulevards. On the ground floor the garage proper occupies a floor space of 50 by 195 feet, with capacity for handling sixty cars. A repair shop will be operated in connection with the garage, which will be completed within 60 days.

Save on Gasoline—New York garage keepers are planning to combine in the purchase of gasoline by the carload. Under present conditions buying gasoline in barrel lots costs 13 cents a gallon, delivered to the garage. Five big garage owners, who use an average of 1,000 gallons a day during the busy season, which would cost about $650, have combined forces and will buy the gasoline in carload lots at the market price of 5½ cents a gallon, which will make a saving of $275 a day, less the cost of carting, which, it is figured, will average about $50 a day. With five garages using 5,000 gallons of gasoline per day, which would mean only an average of 5 gallons per car for each of the 200 cars that might be stored with them, it gives a general idea of the great quantity of gasoline being used in New York in motor cars.

In Other Lands—The Franklin people have recently arranged for representation in the City of Mexico, Yucatan, Porto Rico and Canada.

Name Changed—The Toledo Storage Battery Co., of Toledo, O., has changed the name of the Ex-Cello battery to the Miller. The concern contemplates adding new machinery and more force after the first of the year.

Helps Importers—President Mabley, of the importers' salon, has concluded an arrangement with Collector Stranahan and Appraiser Whitehead, of the port of New York, by which their foreign cars arriving a few days before the show will be brought direct to the garden before being subjected to the inspection of the customs officials. It will save much valuable time, especially on those cars arriving on steamers getting here at the eleventh hour.

Berliet Outlook—Two hundred four-cylinder Berliet cars of 24-30 horsepower and 40-50 horsepower, is the 1906 output announced by the American Locomotive Co., of Providence, R. I., which will turn over these cars simultaneously with the Berliet factory in France. Albert Otto is manager of the new department of the company, which has built thousands of locomotives, and with him is associated James Joyce, a veteran bicycle tradesman, recently with the Electric Vehicle Co.

Smooth Trick—W. H. Durphy, manager of the Chicago branch of the Electric Vehicle Co., is looking for a youth calling himself Sid Kahn who flim-flammed the branch for a $63 tire. Just before Christmas someone called up the store, stating he was the private secretary of John J. Mitchell, the banker, who owns a Columbia, that Mr. Mitchell wanted a new tire and that his chauffeur would call for it. Sure enough, a youngster clad in the conventional chauffeur togs came and got the tire, signed his name to a receipt book and walked out. Later Manager Durphy found out he had been worked and that Mr. Mitchell had not ordered any tire. Warrants are now out for the con man. It's a game that would catch almost any dealer, and the wonder is that more have not been worked in this manner.

For Demonstration—The Packard and Buick cars have been selected for demonstration at the Long Island Automobile Club next Friday.

Now Mrs. T. B. Van Alstyn—T. Butler Van Alstyn, general sales manager of the St. Louis Motor Car Co., is now on his honeymoon, the wedding taking place at Binghamton, N. Y., and the bride formerly Miss Tina M. Porter, of St. Louis.

Co-Operative Garage—The Atwood Automobile Co., of Toledo, O., was born last week, having been incorporated under the provisions of the Ohio laws with an authorized capital stock of $40,000. The garage will be conducted on the coöperative plan, and will be located in the residence section of the city. A. A. Atwood is at the head of the new concern. The Pope-Waverly, Franklin and Packard will be handled.

Wayne's New Factory—The new factory building of the Wayne Automobile Co. is to be located at the northwest corner of Piquette avenue and Brush street, Detroit. The main building will be 400 feet on Brush street and 300 feet on Piquette avenue and will be three stories high. The testing building will be back of the main building and will be 36 by 100 feet, and the boiler and engine room will be 30 by 45 feet, with a covered loading platform 150 by 16 feet. There will also be an inclosed track for testing purposes. Part of the plant will be ready for occupancy by the middle of next month.

Wilkie at Wilkesbarre—Eddie Wilkie, of the Pennsylvania Electric Vehicle Co., of Philadelphia, opened the eyes of the Wilkesbarreites last week by breaking the record up Wilkesbarre mountain in a 22-horsepower Buick. He reduced the figures to 8 minutes flat, the best previous, 8 minutes 4 seconds, having been held by a 50-horsepower car. Wilkie also performed stunts on all the other stiff climbs about the town, and wound up by carrying a millionaire coal operator, and two other passengers a.. the way to Hazleton, over two mountains, on the high gear—over 30 miles—in a trifle under 2 hours. The return trip to Philadelphia was made in 7 hours 50 minutes.

TESTING CREW OF ELECTRIC VEHICLE CO. AT HARTFORD

Digitized by Google

BRIEF BUSINESS ANNOUNCEMENTS

Chicago—The Branstetter Auto Co., has changed its name to the Mitchell Co.

Cleveland, O.—The Baker Electric Co. is to have a new factory near Edgewater Park.

Racine, Wis.—The Mitchell Motor Car Co. has put up a 205 by 80 feet addition to its machine shop.

Morristown, N. J.—The W. H. Dutton Co. will soon take possesison of its new garage on Washington street.

Elkhart, Ind.—Plans are being drawn for a new garage to be built at Main and Jefferson streets for M. Landon.

Bay Shore, L. I.—Howard P. Foster has secured the exclusive right for the Wayne car in Brooklyn and Long Island.

Kansas City, Mo.—The Glide will be sold in Kansas City and vicinity next year by the Ferguson Implement Co.

New York—A. R. Welch, of the Welch Motor Co., will soon announce the location of a new branch to be managed by G. L. Lighthall.

San Francisco, Cal.—The Martland Automobile Co., of Los Angeles, and the Gump Automobile Co., of Los Angeles, will handle the Glide on the Pacific coast.

Springfield, Mass.—The automobile department of the Stevens Arms & Tool Co. is now located in the former factory of A. G. Spalding & Brothers, at Chicopee Falls.

New York—Rudolph A. Seligman has been appointed receiver for the Pioneer Automobile Co., formerly of 54 West Forty-third street, which recently went out of business.

New York—Another foreign car which will soon be placed on the market is the Roselle, which is named after the inventor, M. Roselle, who was formerly connected with the Peugeot company.

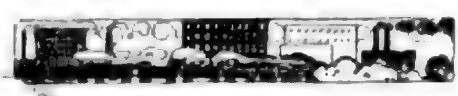
Philadelphia, Pa.—Frank P. Walton, formerly of the Kelsey Motor Car Co., has assumed the management of the Hamilton Auto Co. at 206 North Broad street. This company will handle the Stoddard-Dayton line in this city.

Detroit, Mich.—The City Machine & Mfg. Co. is a new firm, located at 9-13 Orchard street. It will manufacture automobile wheels. In addition it will make a specialty of general repairing and automobile work.

Buffalo, N. Y.—A new idea for the problem of bringing buyers and sellers of second-hand cars has been worked out by a new concern known as the Automobile Clearing Co. Those having second-hand cars for sale will be charged a small fee for registration.

Marysville, O.—The Marysville Motor Co. has been organized to manufacture automobiles. Officers of the company are as follows: President, H. A. Stevenson; vice-president and secretary, George Rausch; treasurer; L. T. Henderson. Harry Tarkington, who was superintendent of the Sommer company's factory in Detroit, will be general manager.

Bloomfield, N. J.—The Torbenson Motor Car Co. has purchased the property at 610 Bloomfield avenue, and after alterations are completed will occupy the building for the manufacture of motors and gears for touring automobiles and trucks.



Brooklyn—The Macbeth Bros. Co. has been incorporated with a capital stock of $10,000, and will engage in the manufacture of wagons, automobiles, etc.

Chicago—The Northern Motor Car Co. has been incorporated with a capital stock of $15,000, and will engage in the manufacture of automobiles.

New York—The Twombly Motor Car Co. has filed articles of incorporation, with a capital stock of $1,000,000.

Hartford, Conn.—Among the new incorporations is that of the Middletown Automobile Body Co., which has a capital stock of about $50,000, and will engage in the manufacture of parts of motor vehicles.

Orange, N. J.—The Automotor Transfer & Storage Co., has been incorporated with a capital stock of $45,000, to engage in the business of storage of carriages and motor vehicles.

Lansing, Mich.—Articles of association have been filed by the Motor Car Co., capitalized at $15,000.

New Haven, Conn.—With a capital stock of $20,000, a company has been incorporated to manufacture and deal in automobiles. It will be known as the Central Automobile Co.

Dayton, O.—The Bordersesch & Glancy Automobile Co. has been incorporated with a capital stock of $25,000.

New York—The Lock-Switch Mfg. Co. has been incorporated with a capital stock of $25,000 and will manufacture and deal in automobiles.

New Orleans—The Tracy Automobilium, Limited, has been incorporated with a capital stock of $50,000, and will engage in the manufacture, buying, selling, repairing, renting and storing of automobiles, and all kinds of vehicles and vessels propelled by power, more specially by steam, gas, gasoline, etc.

New York—The Perfection Reversing Gear & Supply Co. has been incorporated with a capital stock of $50,000, and will manufacture gears, machinery, motors, etc.

Augusta, Me.—The Pontiac Motor Car Co. has been incorporated with a capital stock of $25,000, and will deal in automobiles.

Indianapolis—The American Motor Car Co. has been incorporated with a capital stock of $25,000, and will make, buy and repair automobiles, motor cars, etc.

New York—The E. T. Kimball Co. has been incorporated to manufacture motors, engines, etc. Capital stock, $10,000.

Milwaukee—The Welch-Estberg Co. has been incorporated with a capital stock of $50,000, and will engage in the manufacture of automobiles and motor cars.

Buffalo—The Motor Vehicle Garage Co., of Buffalo, has been incorporated to maintain a garage. Capital stock is $20,000.

Detroit, Mich.—The Motorcar Co. has filed articles of incorporation, the capital stock being $100,000. The stockholders are Frank C. Caughey, Fred Postal, Randall A. Palmer, George A. Young and Harry C. Radford.

Evansville, Ind.—The Windsor Automobile Co., of South Dakota, has been incorporated to manufacture automobiles. Capital stock, $250,000, all held in Indiana, by Albert F. Kargen, John C. Zutt and W. M. Copeland.

Waukesha, Wis.—The Welsh-Estberg Co. has been incorporated for $50,000 by Harrison S. Green, Milwaukee, and William O. and Charles C. Welch of Waukesha. It will manufacture automobiles in Milwaukee.

DeKalb, Ill.—Sheets & Knodle have taken up the agency for the Mitchell car for 1906 exclusively.

New Orleans, La.—The Medina Stamping & Machine Co. has taken the Ford agency for Orleans county.

Passaic, N. J.—L. P. Lonone has made arrangements to handle the Rainier in Passaic and Bergen counties.

New York—A contract has been signed with Charles L. Seeger, giving him the agency for the Panhard in Mexico.

New York—Archer & Co. have secured the agency for the Hotchkiss cars and will shortly open a salesroom on Broadway near Fiftieth street.

Madison, Wis.—Daniel H. Scanlon, of Chicago, has taken the agency for the White steamer for this city and Janesville and will establish headquarters here.

Utica, N. Y.—C. H. Childs & Co. are about to open a new garage at the corner of Cornelia and Cooper streets, their old establishment at 126 Lafayette street being too small.

Detroit, Mich.—The Wayne will be represented in Germany by Leopold, Robert & Co., Nidderstrasse, Frankfurt, A. M. Orlando Baker will handle the Wayne in West Alexandria, O.

Milwaukee—A. D. Meiselbach, formerly a large manufacturer of bicycles, has perfected an automobile delivery wagon. A factory will be built in North Milwaukee, where this machine will be manufactured.

Newark, N. J.—Alexander Ostler, formerly with the Motor Car Co. of New Jersey, and Delancy Zane, formerly with George W. Condon, have opened a repair shop and garage on Crawford street near Halsey.

Newark, N. J.—Herbert Austin, a bicycle dealer, has decided to enter the automobile business, having secured the agency for the Ford. His territory includes Essex, Morris, Somerset and Union counties, and may be extended to the whole state.

Pittsburg, Pa.—B. L. Brown, the manager of the electrical department of the Standard Automobile Co., has organized a new company to be known as the B. L. Brown Co. It will occupy the old establishment of the Hiland Automobile Co. and will take possession February 1.

Newark, N. J.—J. B. Ryalls, manager of the Pope Mfg. Co. for northern New Jersey, has made arrangements to become agent for a French car called the Mierseet, in addition to handling the Pope line. His territory with the new car includes Canada and South America, as well as the United States. He expects to have his samples in his garage in a short time.

Digitized by Google

American Motor League

OFFICERS

ISAAC B. POTTER, President, Potter Building, New York.
CHARLES E. DURYEA, First Vice-Pres., Reading, Pa.
JOHN A. HAWKINS, Second Vice-President, Pittsburg, Pa.
FRANK A. EGAN, Secretary, 152 Nassau St., New York.
FREDERICK B. HILL, Treasurer, 33 Binford St., Boston.

National Headquarters
Vanderbilt Building, New York

THIS LEAGUE
Is Now Collecting Route Information

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

Of course, every reader of MOTOR AGE has read Mr. Duryea's serial articles on "Roadside Troubles." They were written especially for the members of the A. M. L., and the subject has been handled in a masterly way by an author whose long experience and fine technical knowledge have enabled him to write from the standpoint of authority. It was announced that when these articles were published they would be reproduced in book form and a copy given free to each member of the league.

"Roadside Troubles" is now in press. Next week the sheets will be in the hands of the binder, and every effort will be made to distribute copies at the time of the coming automobile shows. That league members may be informed of the scope and character of the subjects treated we print here the chapter headings of the twenty separate chapters.

Chapter I—Selecting a machine—Points to be considered—Electric, steam and gasoline vehicles—Advantages of the gasoline system—Power and strength for rough and hilly roads—Ample clearance—Large wheels.

Chapter II—How weight and strength should be distributed—Importance of careful design—Select a powerful motor—All parts of car and motor should be accessible—Durability—Wearing surfaces must be ample—Avoid "new models"—Flexibility, how to test—Flexible car is the most durable.

Chapter III—The capable machine—Power and strength must combine—Importance of simplicity—The foolish demonstrator—Safety; how it can be secured—Low center of gravity—Parts that give trouble—Protecting the mechanism—Large wheels, large tires, flexible springs and long base for bad roads.

Chapter IV—Cleaning the vehicle—When and how to wash—Keep machine in a light, dry, well ventilated place—Hints to the operator—Have patience; know your vehicle—Examine all parts—Study cause and effect—The pleasure of knowing.

Chapter V—Importance of daily inspection—Knowledge is power—All may and should learn to know the motor car—The steamer; steam vehicle must be understood; features needing most attention—Practical hints and directions.

Chapter VI—The electric car—Its main defect—Care of the electric vehicle—All parts should be understood—Keeping clean—The meters—The batteries—The electrolyte—Practical hints and suggestions—Testing and charging.

Chapter VII—Gasoline; its qualities and uses—Various grades—The proper mixture—The hydrometer—Kerosene may be used—Gasoline not explosive—Possible danger—Gasoline vapor—How to secure safety—Avoid spilling—What to do in case of fire.

Chapter VIII—Storing gasoline—How to prevent waste—Water in gasoline—Keep out impurities—Protecting the carbureter—Combustion troubles—Failure to ignite—Advancing the spark—Three essentials—Testing compression—Where to look for leaks—Valve action.

Chapter IX—Ignition; rapid improvements—Two systems in common use—The primary system—The jump spark—Plugs; their defects; practical hints for care and cleaning—Spacing the points—Testing the plug—Testing the cells—The voltmeter and the ammeter—The vibrator—Importance of proper adjustment—Vibrator points should be large.

Chapter X—Ignition continued—The make-and-break spark; its advantages—Magnetos; their value and reliability—Generators—Most common in jump spark work—Primary and secondary methods compared—Batteries; number of cells—Economy in the use and arrangement of cells—Study of electricity recommended.

Chapter XI—The mixture—Carbureters—Valve movement; exhaust valves and inlet valves—Advantages of multiple cylinders—Lubrication; its high importance—Good oil always cheapest—Comparison of oils—How to lubricate—Oiling devices—Weather effects—Graphite as a lubricant—Lost power—Seized bearing—Inspection.

Chapter XII—Tires—Watch them—Danger of driving on a flat tire—Testing for leaks—Timely hints—Rubber solution; how to use it—Patching the tire—Oil on rubber—Jacks—Cleaning the hands—Large tires recommended; reasons—Avoid mud—The use of tires in winter—Cold season less trying than summer—Cars not in use should be lifted on jacks.

Chapter XIII—General hints—Dry axle; curing its troubles—Back firing; how corrected—Buzzing of the coil—Bad battery—Brake troubles; how to overcome them—Bumping; generaly caused by deflated tire—Various noises and their sources—Broken chain; what to do—Broken springs.

Chapter XIV—Tire failures—What to do when the tire bursts—Carbureter and vaporizer troubles; clogging; freezing—Rich and poor mixtures—How to correct them—Leaky floats; testing and repairing—The coil—Water-soaked coils—Causes and cures—Boiling the coil in paraffine—High tension coils must be kept dry—Clatter in the vehicle—Strange noises must be investigated.

Chapter XV—Engine troubles—Frozen water jacket—Faulty lubrication—Repairing cracked jacket—Circulation obstructed pipes—Harmful results—Gaskets should be thin—How applied—Woven wire and asbestos gaskets—Lead and copper gaskets—The governor—Thawing frozen pipes—Ice in the gasoline—Ice in the feed pipe—Lubrication; constant vigilance required.

Chapter XVI—Engine troubles continued—Unpleasant odors; what they indicate—Leaks must be repaired at once—Overheating; how caused—Remedies—Starting troubles—Advantages of multiple cylinders—Various causes for non-starting—Inspection necessary—Cold weather troubles—Warming the gasoline and thawing ice in pipes—How to proceed—Formula for starting.

Chapter XVII—When the engine stops—The warning—What to do—Testing for trouble—Directions in detail—Vehicle should be fixed before starting out—Battery defects—How batteries run down—Tool kits; a friend in need—What tools are required—The tire repair outfit; its importance—Should always be carried—Extra parts; suggestions—Manufacturers will always advise.

Chapter XVIII—Towing the vehicle; sometimes necessary—How it should be done—Freezing the axle—Pushing the vehicle—Towing by use of rope—The wrong and the right way—How to proceed under different conditions—Knots; the fundamental object in knot tying—How to tie useful knots in the most simple and effective way—Useful knots shown by illustration.

Chapter XIX—More about knots and tying—The slip knot—Sailor's knot—Square knot—Weaver's knot—A convenient knot described—Hitches—Splices—The splicing of wires—The lineman's splice—Flexible wires and stiff wires—Wire-cutting pliers should be used—Breaking wires—Hints in brief.

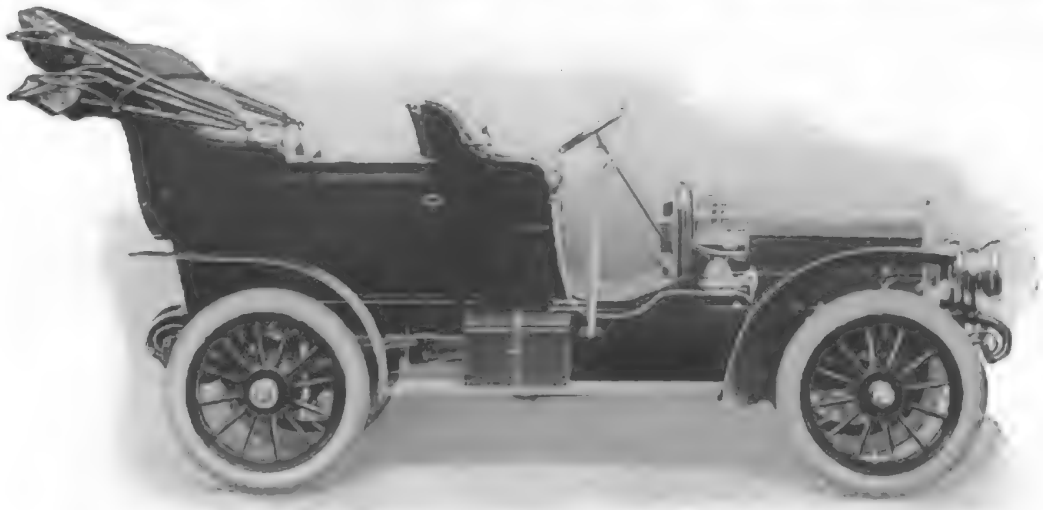
Chapter XX—Filling tanks and oil cups without a funnel—How to pour oil—The paper funnel for emergency use—Care of the hands—Keep the hands smooth—Glycerine and water recommended—Soaping the hands before work—Strong soaps roughen the skin—Abrasive soaps often preferred—Sawdust and turpentine—Ammonia—Cuffs; hints for keeping clean—Emergency jacks.

FREE COPY TO EACH MEMBER

Each member of the A. M. L. will receive by mail a free copy of "Roadside Troubles." This applies to all members in good standing at the time of publication. The list is now being made up and wrappers addressed. No initiation fee. Dues, $2 a year.

Digitized by Google

WINTON MODEL-K



WHAT DOES IT WEIGH?

That's a question often asked by prospective buyers of automobiles.

And it's a proper question, too.

Because, if the weight is not properly proportioned to the car's size and carrying capacity, the buyer gets into trouble.

So you **must** consider WEIGHT.

Some automobile builders **take chances** on light weights, making the buyer **run the risk** of breakdowns and perhaps serious accidents.

That's bad business, but it's true.

Keep that in mind when buying and **don't be misled** by any siren song of how much power you save in running a skeleton-weight motor car.

Gasoline and horse-power are cheap compared with HUMAN LIFE.

You can richly afford to waste power, if your car is so substantially built that, no matter how rough, or rocky or hilly the road, your life and limb are **never in danger.**

But you are **not compelled to waste power** to secure absolute safety in motoring.

Get a **Winton Model K.**

Every kind of metal used in the Winton Model K is **tested** in our own plant, on our giant Riehle Testing Machine, before we put a pound of it into use.

These tests show how many pounds pressure or pull to the square inch Winton Model K metals withstand before cracking or breaking.

This testing machine exerts a strain up to 200,000 pounds (100 tons) to the square inch. Think of it!

We don't gamble on weights. **We insure your safety** by using material that will live through any strain.

We cut out every possible waste of power by **grinding** all bearings to the smoothness of plate glass.

And we put into the car an engine **big enough and powerful enough** to drive the car and carry its full load of passengers at full speed, without damage to engine or danger to passengers.

If we wanted to take chances—at your risk—and save money in manufacture, we could reduce the weight of Model K at least 350 pounds.

But, every pound of weight in the Winton Model K is there because it represents honest construction, stability and utter **absence of danger** to you when you ride in it.

Look at our massive Manganese Bronze Front Axle. That's a fair specimen of Winton construction. That axle weighs something. And it's an axle that **won't let down under you,** no matter how fast you go or how many passengers you carry.

MODEL K WINTON.—Four vertical, water-cooled cylinders, 30 H. P. or more. Quiet running. Abundant reserve power. Velvety, non-jar, non-shock, non-breakable transmission. Flexible speed control. Shooting oiler. Exclusive Twin Springs. Easy Riding. And every other feature that a real high-grade car should have. $2500 f. o. b. Cleveland. Compare it with cars selling at $1500 and more.

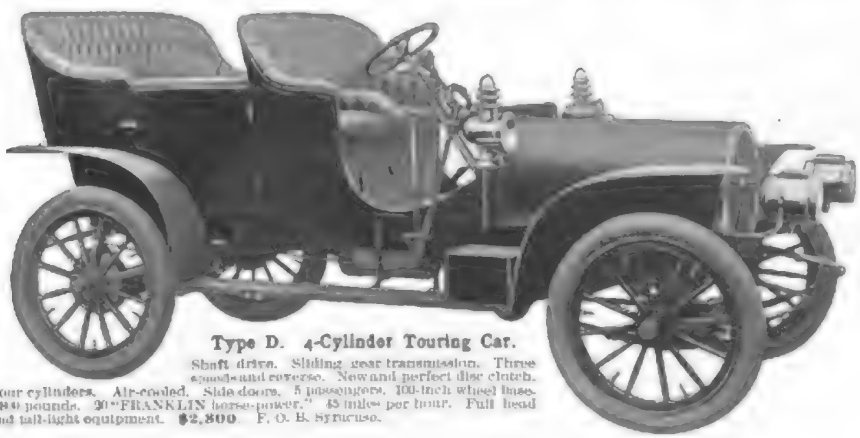
THE WINTON MOTOR CARRIAGE CO.

CLEVELAND, O. Member A.L.A.M. **U. S. A.**

CATALOG NO. 2 IS READY

We will exhibit in New York at the Madison Square Garden Show ONLY, January 13-20, 1906

FRANKLIN



Type D. 4-Cylinder Touring Car.

Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Four cylinders. Air-cooled. Side doors. 5 passengers. 100-inch wheel base. 1,840 pounds. 30 "FRANKLIN horse-power." 45 miles per hour. Full head and tail-light equipment. $2,800. F. O. B. Syracuse.

This is the most surprising car on the market. Nobody can believe what it will do until he tries it. No "30-horse" can do more under any conditions; and no car of any power or price—built anywhere, can do more with five people on American country roads.

Its perfect cooling light-weight and non-jarring qualities enable it to maintain speed indefinitely, and over poor and hilly roads; and make it an extraordinary climber.

It belongs in the "big-car" class; has all the comfort, roominess and style; without the weight, danger and excessive useless cost.

Franklin cars are built on principles that are like diamonds—they can never become old-fashioned. They are becoming more widely recognized and accepted. They are growing more and more into vogue every day.

Last year's Franklins have proven so successful that imitations of them will appear next year and for many years in many other cars. Even a second-hand Franklin is a year or two ahead of the times.

Another point—a most important one: Franklins are made—in every part, of the most suitable and durable materials; and are put together in the most substantial and effective manner that money can pay for. They will not only remain in style but they will continue to do the work.

The first Franklin ever put on the market in 1902 is running today—and running satisfactorily. A Franklin's years of active usefulness have never been measured.

That is why a second-hand Franklin is a first-rate property, commands more money than many first-hand cars of equal pretensions. The value is there; and it is known.

Four Models for 1906

4-Cylinder Runabout 4-Cylinder Light Touring Car 4-Cylinder Touring Car 6-Cylinder Touring Car

We exhibit at Madison Square Garden, New York, January 13-20, 1906

H. H. FRANKLIN MFG. CO., Syracuse, N. Y. M.A.L.A.M.

Digitized by Google

The Six-Cylinder Ford

"Always a year or two ahead." When the single-cylinder car was "it," Henry Ford produced a double-cylinder opposed motor, more powerful and at a lower price.

When the automobile trade finally awakened to the possibilities of the two-cylinder opposed motor, Mr. Ford produced a four-cylinder car at $2,000 that was in a class by itself, the public having been taught to believe that such a car could only be produced at a fabulous price.

And now, having exhausted the possibilities of the four-cylinder car in a touring car class, he has introduced it into the Runabout class, and in addition offers a six-cylinder car that is proportionately as far in advance of all competition as his first double opposed motor.

This is a wonderful car.

First, its six cylinders, with 40 horsepower, give a latitude of speed never before accomplished in a car of its class and weight, 2,000 pounds. From four miles per hour on a high-gear up to 50 miles.

While one cylinder of this car will develop sufficient power to drive it along an ordinary asphalt pavement, the whole six cylinders inspire the driver with the confidence that there is an enormous latent energy in his motor, ready for any new demand without overloading the motor, making it the easiest controlled and most flexible automobile motor ever built.

When you have seen this motor in operation you will fully appreciate that we have the smoothest running automobile motor in the world.

Price, $2500.00

The Ford Four-Cylinder Runabout

It is a fact that thousands of these cars are in course of construction.

Like all Ford cars, this one is a radical departure from previous and popularly-accepted designs, and there is a reason behind every radical idea.

Henry Ford built a four-cylinder engine for his Runabout with fewer parts than the old-fashioned single-cylinder engine had, and the Ford Motor Co. have an enormous factory that does nothing but build motors for this Runabout, with a capacity of 100 complete engines every day.

The whole thing is very simple when you go about it right.

This is why we can build the Ford four-cylinder Runabout for less than $500.00.

We are making 40,000 cylinders,
10,000 engines,
40,000 wheels,
20,000 axles,
10,000 bodies,
10,000 of every part that goes into the car.

Think of it! Such quantities were never heard of before. We buy 40,000 spark plugs—10,000 spark coils—40,000 tires—*all exactly alike.*

The first Runabout (Model A) we built cost $30,000—yet we sold duplicates of that model for $750.00.

It is the quantity that counts.

Ford Motor Company, Detroit

Member American Motor Car Manufacturers' Association, Chicago

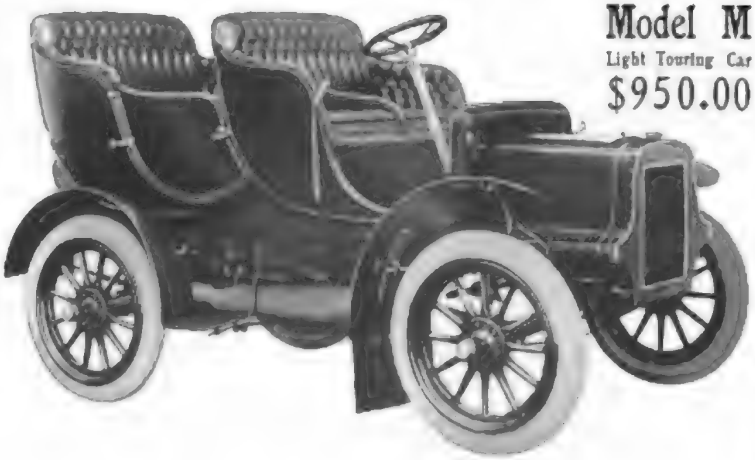
Branches: 147-149-151-153 Columbus Ave., BOSTON; 1723 Broadway, NEW YORK; 727 Main St., BUFFALO; Broad and Buttonwood Sts., PHILADELPHIA; 1413 Michigan Ave., CHICAGO; CLEVELAND and KANSAS CITY

CANADIAN TRADE supplied by FORD MOTOR COMPANY of Canada, Ltd., Walkerville, Ontario

Digitized by Google

1906 Single Cylinder Cadillacs

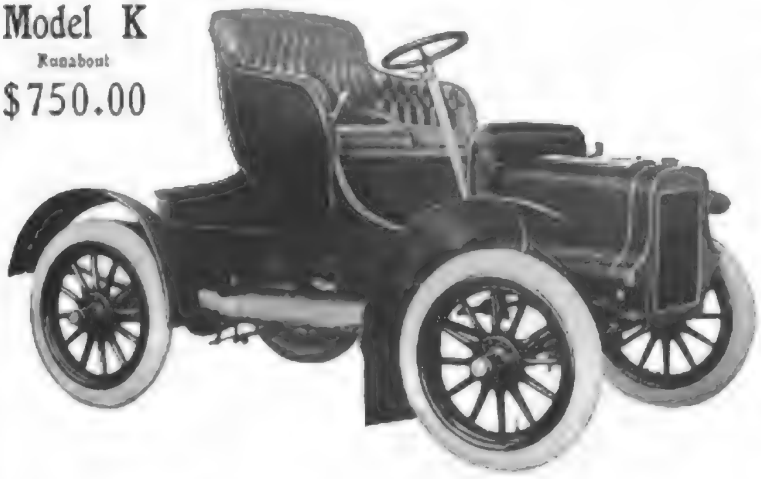
Motor, single cylinder, four cycle 5 in. x 5 in. Ten H. P. water cooled. Copper water jacket. Mechanical pump feed lubricator. Jump spark ignition, Planetary transmission, two speeds forward and reverse.



Model M
Light Touring Car
$950.00

Pressed steel frame, channel pattern. Brake on extra large differential drums. Chain drive. Three spring suspension, rocker joint on front spring, more than doubling spring efficiency. Wheel base 76 inches. Tires, 30x3 1-2 on Model M, 28x3 on Model K. Bodies, Victoria pattern, strikingly beautiful. Pressed steel hollow dash. Finish, purple lake (a deep, rich wine color) on body panels and doors with light carmine striping. Dark carmine running gear. All parts thoroughly interchangeable. Cadillac quality throughout offering values never before equaled.

Model K
Runabout
$750.00



Our four cylinder line consists of Model H. 30 H. P. Touring Car at $2500. Runabout at $2400 and Coupe at $3000. Also Model L. 40 H. P. Touring Car at $3750 and Limousine at $5000. These will be announced in detail later and exhibited at New York at Madison Square only, also at the Chicago Show.

Cadillac Motor Car Company DETROIT, MICH.

Members of Association Licensed Automobile Manufacturers.

A GOOD FRONT

We believe in putting up a good front, and our cars show it—as it will also be shown in our New Building at Fifty-fifth St. and Broadway, which we hope will be ready for occupancy in a few days, and where we will have a continuous plate glass corner front, permitting LOZIER MOTOR CARS to be shown to the best possible advantage. And they will stand all the light that can be thrown upon them, for their fine construction, finish and equipment is such as invites the very closest inspection. The Lozier Car is the very largest American Car, and in price it is deservedly the highest. We are now delivering Limousines, Landaulets, and Touring Cars, 35 Horse-power, Type C, 1906 Model, and every owner of a LOZIER MOTOR CAR is one of experience who has at last found the ideal in our product.

LOZIER

THE LOZIER MOTOR COMPANY

Temporary Quarters at R. M. Stiver's Carriage Room, 19 W. 62nd St., New York City

¶ The working out of a new principle of design as has been done in the Stevens-Duryea was a big achievement, so big that the public would have been tolerant with us if we had made a few errors in the application. In fact, most of those who have been watching the Stevens-Duryea during the year of 1905 were quite confident that such errors would show up before the season was half over. However, the makers of the Stevens-Duryea deserve unusual credit, for they not only perfected a new principle, but they got the ***application*** right in every detail the ***first time they tried.*** As a result we come before the public for 1906 with not a single excuse to offer for our 1905 product; and furthermore, we wish to direct attention to the fact that not a single one of our claims about its good features as expressed in our advertising or descriptive matter during 1905 was, after a season's use, proven inaccurate or overdrawn in the slightest degree. And, considering the many unequivocal statements we have made during the past year, the above record is without a parallel.

J. STEVENS ARMS & TOOL CO.
Makers of the "TWENTIETH CENTURY HUSTLER"
705 MAIN STREET CHICOPEE FALLS, MASS.
Member Association Licensed Automobile Manufacturers.

Digitized by Google

The Queen

$2000

One of Our Three New Models

MOTOR—4-Cylinder—26-28-H.P.
DRIVE—Shaft Bevel Gear.
FRAME—Pressed Steel.
WHEELS—32 x 4.
WHEEL BASE—101 inches.
TRANSMISSION—Sliding Gear.
FRONT AXLE—Solid-forged.
GROUND PARTS — All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.
EQUIPMENT—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at $1,100—and a Runabout 12-H.P. at $800.

Write us for complete details and agency proposition.

C. H. BLOMSTROM MOTOR CO., Detroit, Mich.

New York Agents, Majestic Auto Co., Cor. 54th & Broadway Chicago Agents, Branstetter Motor Co., 1337 Michigan Ave.

Digitized by Google

OLDSMOBILE

Standard Runabout Model "B" Price $650

For 1906 we have brought out, in addition to our well-known curved dash runabout (the "you see them wherever you go" kind), a straight dash or "piano box" runabout, which we sell at the same price. This style appeals strongly to a certain class of drivers. It is unique and attractive and possesses all the most desirable features essential to a satisfaction-giving runabout.

It has a simple single cylinder motor, with 7 h. p. It is lever controlled. Starts from the seat; has safety device to prevent all danger of back fire; effective and easily operated brakes, and many attractive and serviceable features, making it up-to-date and desirable in every way—a big value for the money, and essentially a car for business utility.

Use the Catalog Coupon below for further particulars regarding the Standard Runabout, Model "B," price $650; the Palace Touring Car, four-cylinder, Model "S," price $2,250; two-cycle Model "L," price $1,250, or any of our commercial vehicles.

Our New Models will be on Exhibition at Madison Square Garden Automobile Show, January 13-20, 1906

OLDS MOTOR WORKS, Member A. L. A. M. Lansing, Mich., U. S. A.

CUT COUPON HERE

CATALOGUE COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Kindly send me information regarding cars checked. Am interested.

Model B.... Delivery Cars....
Model S.... Passenger
15 Model L.... Traffic Cars....

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

CALENDAR COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 10 cents, for which send your Art Calendar (free from advertising and suitable for framing) for 1906. Design by George Gibbs. 15

Name _____

Address _____

CUT COUPON HERE

CUT COUPON HERE

MOTOR TALK COUPON

OLDS MOTOR WORKS
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR TALK*, a magazine devoted to automobiling, sent to me for 1 year. 15

Name _____

Address _____

Members American Motor Car Manufacturers' Association, Chicago.

Digitized by Google

MITCHELL

"The Car You Ought to Have, at the Price You Ought to Pay"

Model D-4 **$1,800** **24-30 H.P.**

MOTOR — 4¼ x 5 inches; 4 cylinder vertical.
TRANSMISSION — Slide Gear, 3 forward, 1 reverse, direct drive on high speed with no gears in mesh.
WHEEL BASE—100 inches.
TREAD—56 inches.
WHEELS—32-inch artillery.
TIRES—4-inch.
STEERING GEAR—Irreversible.
CONTROL—Spark and Throttle.
DRIVE—Bevel gear, shaft drive.
LUBRICATION—Mechanical.
CARBURETER—Float Feed.
RADIATOR—Cellular, with fan.
SPRINGS—40-inch, half elliptic.
FINISH—Blue body and gear.
SPEED—40 miles per hour.
BRAKES—Foot and hand emergency.
EQUIPMENT—Side lamps and complete set of tools.

¶ A car for the buyer who desires something finer and more luxurious than can be given at the price of our $1,250 Model B-4.

¶ In this car the engine is larger, the body more roomy, the upholstering of the *best possible quality*, and each detail worked out to the *highest degree of perfection*.

¶ This model will bear the most careful scrutinizing from every point of view and compares favorably with the highest priced cars.

No car at any price can be more perfectly constructed or better finished.

¶ Five models in all comprise 1906 line as follows: — 2-cylinder Runabout, 4-cylinder Runabout, 2-cylinder Touring car, 4-cylinder Touring car (herewith shown), and the famous Mitchell commercial delivery car.

¶ Send ten cents for Art Catalogue — the handsomest ever published.

MITCHELL MOTOR CAR CO. - Racine, Wisconsin

Members American Motor Car Manufacturers' Association

Digitized by Google

The Stearns

A fulfillment of Prophecy

One Model 45 Horse Power

Produced by a determination to fulfill now the prophecy of ultimate supremacy for American Automobiles—the result of devoting one factory for ten years to perfecting one model.

We buy material in any country that produces the best for the purpose; but American machinists finish it all—they spend over two thousand hours on each car finishing parts otherwise complete. More time and care than any other touring car receives. Fitted parts are required when picked up at random to snap together like your watch lid, hang tight, yet part in the hands.

By what process could any maker, anywhere, produce a better car? Where is another so made?

After producing this car we figured the cost and selling price. We were pleased to find that the duties and excessive commissions on our only competitors, make our charge—$4,250—barely half the cost of any foreign car that makes a comparison possible.

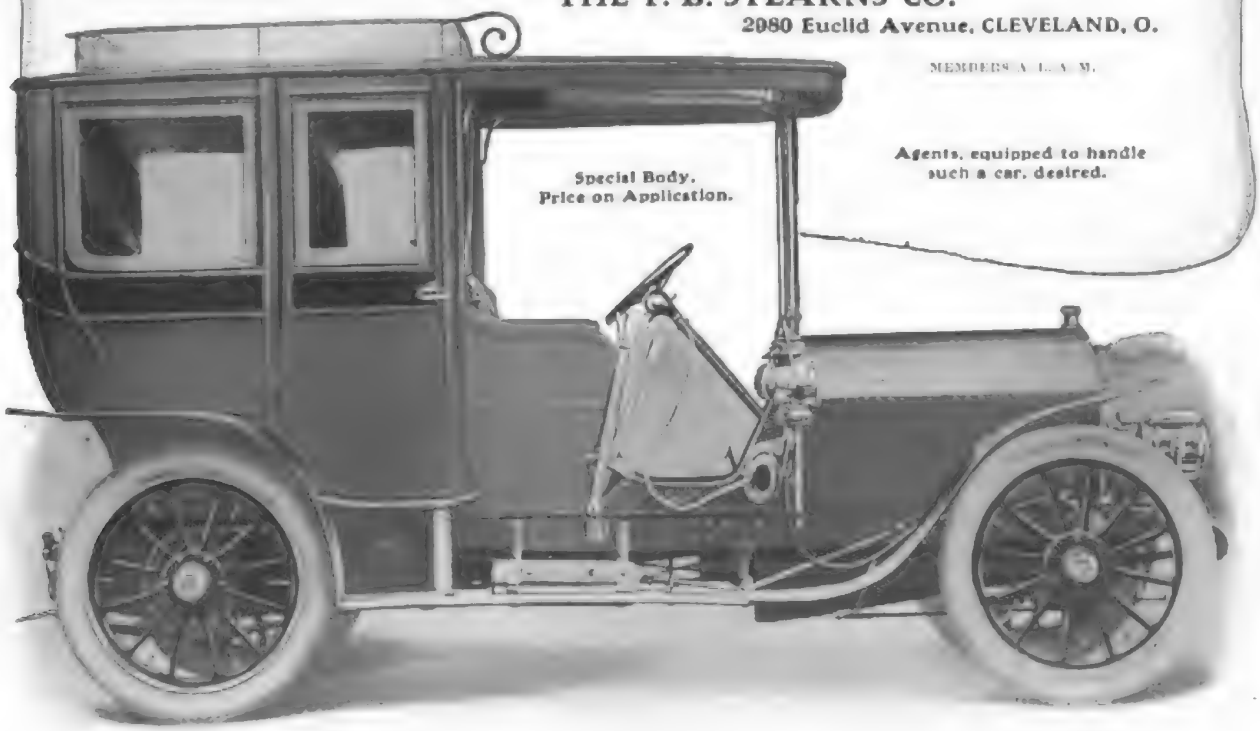
We seek communication with those who will appreciate this car. For such it will give a service greater than any other mechanism the world has produced. Shall we send our book of details?

THE F. B. STEARNS CO.

2980 Euclid Avenue, CLEVELAND, O.

MEMBERS A. L. A. M.

Agents, equipped to handle such a car, desired.



Digitized by Google

The Greatest Subscription Offer of the Season

$6.50 of the best Automobile Reading Matter for $3.00

Motor Age of Chicago
and
Motor of New York

For Three Dollars

In addition to above Special Offer we will send absolutely

FREE

ONE COPY OF

A work of practical information for the use of Owners, Operators and Automobile Mechanics,

Giving full and concise information on all questions relating to the construction, care and operation of gasoline and electric automobiles, including

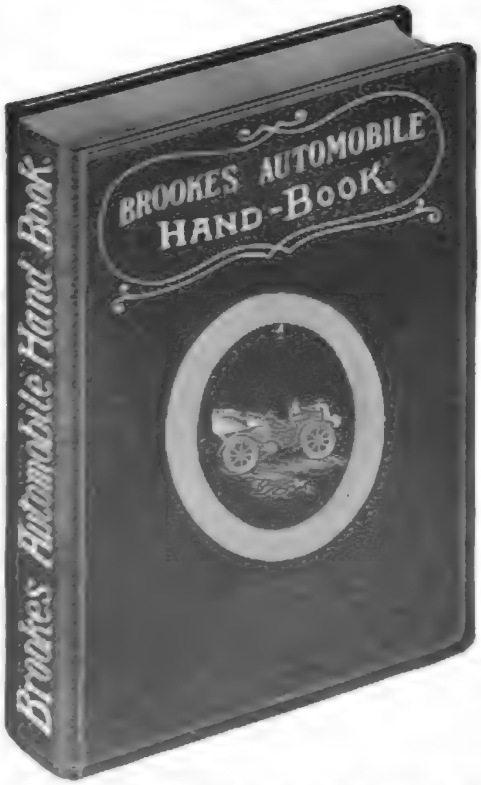
Road troubles
Motor troubles
Carburetor troubles
Ignition troubles
Battery troubles
Clutch troubles
Starting troubles

Pocket size. 4x6½. Over 270 pages. With numerous tables, useful rules and formulæ, wiring diagrams and over 175 illustrations, by

L. Brookes Brookes,

Author of the "Construction of a Gasoline Motor."

Price, One Dollar and Fifty Cents



TOTAL VALUE

Motor Age one year - -	$2.00
Motor one year - - - -	3.00
Brookes Automobile Hand-Book	1.50
	$6.50

From above you will see, by sending us three dollars, that you receive in return the total value of six dollars and fifty cents.

Don't Delay

but send your order with remittance direct to

Motor Age

309 Michigan Ave.
Chicago

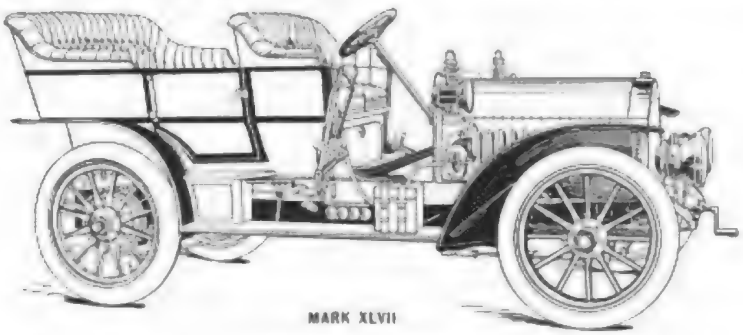
THIS DOES NOT REFER TO SUBSCRIPTIONS SENT IN PRIOR TO THIS ANNOUNCEMENT

Digitized by Google

Columbia

Gasoline Cars for 1906

ARE built of the best materials in the world under methods and processes more advanced than those employed in any automobile factory other than our own. No consideration of the cost of production has been permitted to interfere with making perfect every part and piece of each model, whether pertaining to mechanism, bodywork or general equipment. The expense of making the crankshafts, for instance, is six times greater than that of any previously made in this country. We guarantee that these cars, each according to its power and place, will yield the greatest things possible in motor service.



MARK XLVII

MARK XLVII 40-45 h.p. four-cylinder motor under forward bonnet; sliding gear transmission, four speeds and one reverse; jump-spark ignition from storage battery; new pattern automatic carbureter; special chrome-nickel steel gears, axles, crankshaft and jackshaft; crankshaft machined cold out of solid block; double chain drive; I-beam front axle forged in one piece; pressed steel frame; 108-inch wheel base; seat starting; new pattern brakes. Price, with standard body.....$4,500
With 112-inch wheel base, Royal Victoria, Double Victoria, Limousine or Landaulet body.....$5,000 to $5,500

MARK XLVI An entirely new model. 24-28 h.p. four-cylinder, vertical water-cooled motor; shaft drive, sliding gear transmission; three speeds and reverse; low tension make and break magneto current ignition; special chrome-nickel steel gears and shafts, crankshaft machined cold out of solid block; I-beam front axle forged in one piece; rotary pump oil lubrication; pressed steel frame, 96-inch wheel base; double side entrance body seating five passengers. Price.....$3,000

MARK XLIV-2 Perpetuating Mark XLIV, one of the most successful of medium-weight 1905 cars. 18 h.p. double opposed horizontal motor under forward bonnet; frame length increased eight inches, giving ample room forward of each seat; wheel base increased to 90½ inches. Rear seat widened five inches; double side entrance body. An ideal family car, which will climb any hill and maintain a speed of 35 miles an hour on the level. Price.....$1,750

Columbia Electric Carriages

Victoria-Phaetons, Runabouts, Broughams, Landaulets
Hansoms, Surreys, Delivery Wagons, Truck.

Separate catalogues of Columbia Gasoline Cars, Columbia Electric Carriages and Columbia Electric Commercial Vehicles will be sent on request.

ELECTRIC VEHICLE COMPANY, HARTFORD, CONN.

New York Branch: 134-136-138 West 39th St. Chicago Branch: 1332-1334 Michigan Ave. Boston: Columbia Motor Vehicle Co., 74-76-78 Stanhope St. Philadelphia: Pennsylvania Electric Vehicle Co., 250 North Broad St. Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave. Paris: A. Bianchi, 194 Boulevard Malesherbes.
Member Association of Licensed Auto Mfrs.

Digitized by Google

WAY'S MUFFLER

PAT. NOV. 16 and 30, 1897

WHICH WAY DO YOU WANT IT?

An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct

THIS IS THE WAY YOU WANT IT

Either Protect Your Throat

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

WAY'S Muffler

is a perfect throat and chest protector.
Comes with or without ear tabs as preferred.
Especially adaptable for winter motoring.
As easy to put on as your hat.

The Way Muffler Co.

MANUFACTURERS

Cor. 21st and Arch Streets PHILADELPHIA, PA. J. HOWARD WAY, Prop.

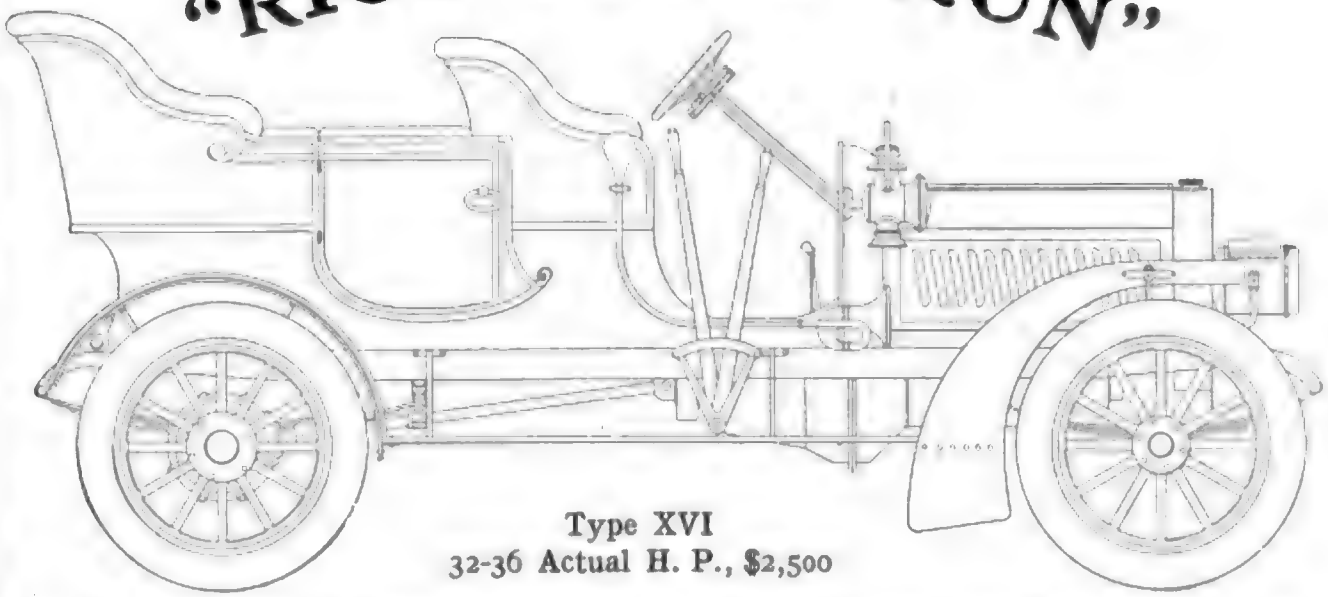
Chicago, 28 Madison Terrace — New York, 45 Lispenard St.

Motor Age

Digitized by Google

1906 ST. LOUIS 1906

"RIGS THAT RUN"



Type XVI
32-36 Actual H. P., $2,500

Our 1906 Type XVI is the crowning triumph of fifteen years' experience in building gasoline automobiles. This model represents EVERYTHING GOOD in modern automobile construction. You cannot afford to pay more, and you couldn't expect to pay less. Compare Type XVI with any other car listing from $3,000 to $5,000, and we doubt if you will find any vast difference in other than the price. An agent should sell a car that will instantly appeal to all classes. Thousands of prospective purchasers are in the market—a few of them will insist on paying $5,000 and over—a few more will insist on $2,000 and under, but eight out of every ten will be the BETWEEN class, if they can get the satisfaction at a reasonable price. Type XVI is between the two extremes (in price), but from closest observation we fail to see where it will not compare inch for inch with any car built in AMERICA. A FAIR, UNPREJUDICED COMPARISON IS ALL WE ASK. It will carry five people comfortably at any speed from four to fifty miles an hour, absolutely noiseless, no vibration, will negotiate 22 per cent grade on high speed. General finish, upholstering and trimmings cannot be surpassed—no matter what the price.

MOTOR—Four-cylinder vertical, under hood, water-cooled, developing 32-36 actual H. P. Entire construction highest grade. Muffler reduces noise to nothing. (Quietest car in existence).

VALVES—All are mechanically operated, generous bearings (Cramp's special bronze) throughout. Large fan behind radiator.

CRANK CASE—Made of special metal. Instantly accessible aluminum side plates allow instant inspection of connecting rod, crank shaft, etc. Full metal pan under engine.

FRAME—Specially prepared pressed steel, channel section; 4¾ inch tapered and reinforced. Motor and transmission integral assuring perfect alignment under all conditions.

TRANSMISSION—Sliding type, three speeds and reverse, all gears made of special high carbon steel. All shifts made with one lever. Clutch metal to metal, multiple disc, load is taken up gradually. No matter how sudden the shift is made the jerk is ABSENT.

CONTROL—New style rack and pinion with ball and socket joints to take up all wear. Spark and throttle control placed conveniently under steering wheel, also accelerator foot pedal to use if desired for QUICK SPEED CHANGES.

BRAKE—Three in number—any one of which will hold car on any grade. Same are controlled by both foot and lever at side of car. Application of foot brake throws out clutch, disconnecting transmission from motor.

AXLES—Front extra heavy dropped forged I beam, guaranteed not to spring. Rear axle of the floating type all equipped with Timken roller bearings throughout.

DRIVE—Bevel gear regular ratio three to one. We will furnish lower gearing upon request.

SPRINGS—Large half elliptic of the best quality obtainable. Front 38 inch, rear 48 inch. Three-point suspension throughout, allowing perfect riding over the worst road conditions.

Our cars contain many individual features of merit, which we have omitted to mention. Our new elaborate catalogue explains every detail and will be mailed upon request. Fifteen years' building experience has taught us the proper kind of material to use and how to use them correctly. We have simply covered the broad points of general construction, that you may compare Type XVI with other makes costing nearly twice as much. Some cars may COST MORE—but none are better. We have not sacrificed one iota to cheapen our product. The material throughout is GOOD OLD ST. LOUIS quality from the ground up. Our name is on it and our guarantee back of it.

LASTLY—We are fast closing all available territory and our agency list will be filled before the New York show. If we are not already represented in your immediate vicinity, you had better write for printed matter AT ONCE. Don't wait until show time and be among the "ALSO RANS." Our agency proposition is most entertaining—it MIGHT pay you to investigate.

ST. LOUIS MOTOR CAR CO., Peoria, Ill.

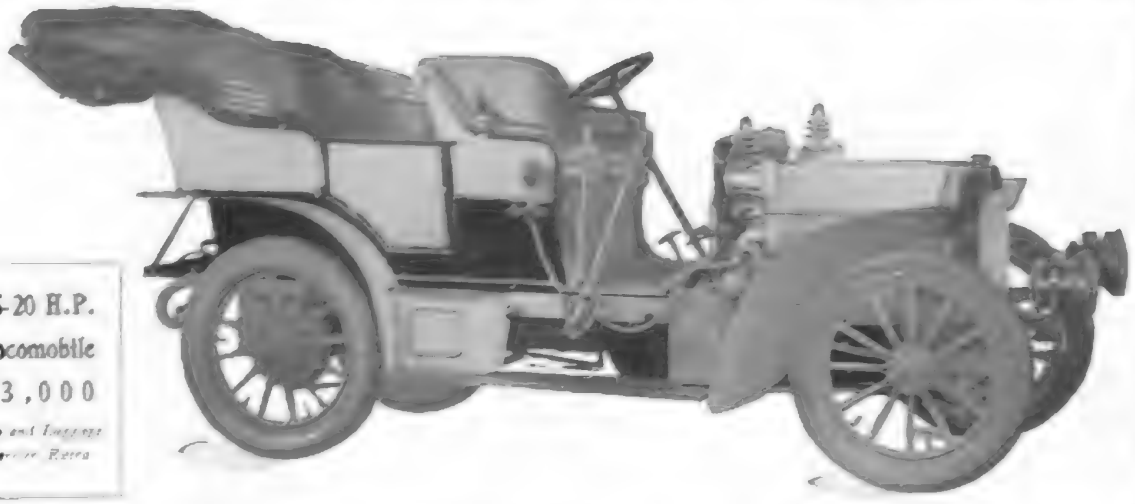
General Sales Offices, 1229 Michigan Avenue, Chicago, Ill.

Digitized by Google

Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., $3,000, 30-35 H. P., $5,000, both with complete touring equipment



15-20 H.P.
Locomobile
$3,000
Top and Luggage Carrier Extra

TYPE "E" Locomobile 15-20 H. P.

PRICE—$3,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 3⅝ inch bore, 4½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—32x4 inches on all four wheels.
WHEEL BASE—93 inches.
CONTROL—Gas and spark levers on steering wheel.

TYPE "H" Locomobile 30-35 H.P.

PRICE—$5,000 ready for touring.
EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.
BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping optional.
MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke.
CAM SHAFTS—Hardened forgings; all cams integral.
CRANK SHAFT—Machined from one solid forging.
LUBRICATOR—Large, mechanical lubricator.
CARBURETOR—Automatic, with balanced throttle valve.
GOVERNOR—Centrifugal type, prompt and positive in action.
IGNITION—Make-and-break.
MAGNETO—Low tension, our own design and manufacture.
ALUMINUM PAN—Is placed underneath the machinery.
FRONT FENDERS—Have inner wings extending to bonnet.
CLUTCH—Cone type, with ample surface.
TRANSMISSION—Three forward speeds and reverse.
DRIVE—Double side chains.
DOUBLE UNIVERSAL JOINT—Between clutch and transmission.
RUNNING BRAKE—Large and powerful, metal to metal surfaces.
EMERGENCY BRAKES—Internal expansion type, metal to metal.
BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.
AXLES—"I" section hand welded axles.
RUNNING BOARDS—Rubber covered and brass bound.
TIRES—34x4½ inches.
WHEEL BASE—106 inches.
CONTROL—Spark and gas levers on steering wheel.

The Locomobile Company of America, Bridgeport, Conn.

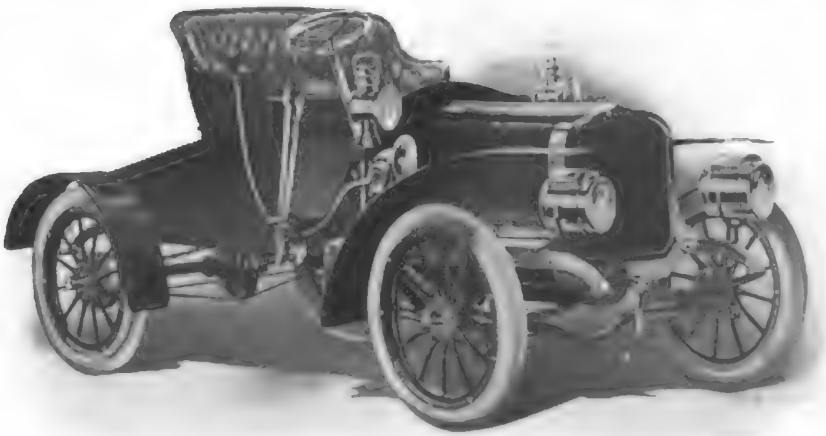
NEW YORK, 76th St. and Broadway.
PHILADELPHIA, 247 N. Broad St.

Member Association Licensed Automobile Manufacturers.

BOSTON, 15 Berkeley St.
CHICAGO, 1354 Michigan Ave.

Digitized by Google

Corbin Cars for 1906



Model G. High Powered Runabout, 24 h. p. $1,800.

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section, drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body latest French type for two passengers, divided front seats. Long, graceful tail box. Wheel base 93 inches. Weight 1,650 pounds. Speed 50 miles per hour. Three oil lamps, horn and full complement of tools, constitute the equipment.

Annular Ball Bearings Are Employed Throughout

Certain agency opportunities are still open. Representative dealers are requested to communicate with us to insure early delivery of cars.

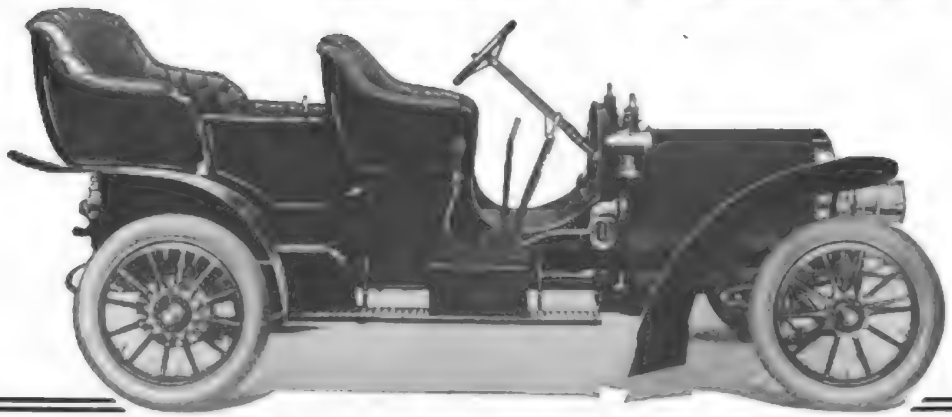
Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati
5905 Centre Ave., East End, Pittsburgh 470 Broad St., Newark

Digitized by Google

THE MARION



In designing the perfect car progress is towards the complex, but improvements are from the complex to the simple. The two questions before us are, first, what is best; and, second, what is simplest. If both can be found in one form that form is certain to be the ultimate. The MARION contains both.

Detailed Specifications of "Model Five"

Body: Beautiful design; wood, selected and thoroughly seasoned; double side entrance, detachable tonneau, door width 21 in.; seating capacity five persons. Semi-divided front seat.

Upholstering: Finest quality French finished hand buffed leather, curled hair, and oil tempered steel springs in seats and backs. Deep full cushions, luxurious and very comfortable.

Springs: Full elliptic, oil tempered; 36 in. front; 38 in. scroll rear; 1¾ in. wide. Auxiliary leaves take severe blows.

Finish: The highest obtainable skill in using paints and varnishes of the finest quality produces a superb finish. Standard color, body light Brewster green, trimmed with black. Running gear light Brewster green. Both having an appropriate fine carmine striping, giving a refined and handsome appearance.

Frame: Pressed cold rolled steel, consisting of two straight side members and three cross members only. Gusset plates at every joint. Hot riveted.

Hood: Plain, triple hinged, lifting from either side and removable, brass front grill, stationary.

Weight: Fully equipped and ready for road 2,100 pounds.

Wheels: Artillery, Schwartz patent, second growth hickory; 10 spoked front, 12 rear; diameter 32 in. Large ball bearings.

Wheel Base: 108 inches.

Wheel Gauge: 56½ in. from center to center of tread.

Tires: 4 in. Clincher type, of any standard American make. Optional 3½ in. Fisk heavy car type.

Control: Right hand side. Steering wheel 16 in., gear irreversible. Spark and throttle levers in wheel. Clutch and running brake operated by "push" pedals. Gear shifting and emergency brake levers at side.

Brakes: Hand and foot, very powerful, in the form of bronze expanding shoes applying within drums fastened to spokes of wheels.

Motor: 4-cylinder vertical, placed lengthwise. "Marion" system of air-cooling. Mechanically operated valves; cam shaft and gear inclosed within crank case, of aluminum. All working parts carried by upper half of case; lower half removable without interfering with bearings. Starting crank fastened to frame and held in vertical position when not in use.

Horse-power: 24-28. Range of speed 150 to 1,500 revolutions per minute.

Cylinders: Special quality cast iron, machined all over, giving absolute uniform distribution of metal. An important air-cooled feature. 4½ in. bore; 4½ in. stroke.

Crank Shaft: 4 throw; 1¾ in. diameter; machined from hand forged billets of 25 point carbon steel. Five extra long bearings, the rear being 4¼ in.

Fly Wheel: Accurately turned, balanced, and finished, 19 in. in diameter; weight 105 pounds. 6 fan blade spokes.

Fan: Aluminum, 16 in. in diameter. Hess-Bright bearings. Driven by 1¾ in. flat belt.

Lubrication: Splash, 4 compartments in bottom half crank case, holding approximately one gallon of oil, sufficient for 200 miles. Supply readily replenished by tank supported from crank case. Inspection glasses to ascertain height of oil.

Muffler: Exceptionally large, noiseless, and without back pressure. Exhaust pipe 2½ in. in diameter. Cutout operated by heel.

Ignition: Jump spark, 4 unit coil, 3 cell 6 volt storage battery, good for 1,000 miles, carried in box in running board. Plugs located in intake chamber; fouling impossible.

Gasoline Capacity: 17 gallons. Copper tank under front seat.

Clutch: In transmission case; multiple disc; non-adjustable and running in oil. Gradual but positive engagement.

Transmission: Sliding gear, 6 pitch, giving 3 forward speeds and reverse. Secondary shaft does not revolve when driving on top gear.

Drive: Double side chain; large sprockets; 25 and 40 teeth.

Road Clearance: 10 in. This extreme is only possible by the divided chain drive.

Dash: Cast aluminum, oval.

Equipment: 2 acetylene head lights, 1 acetylene gas generator, 2 oil side lamps, 1 oil tail lamp, 1 French horn, reflexible tube; a complete set of tools and parts carried in accessible tool box under rear of frame.

Accessibility; Simplicity: THROUGHOUT.

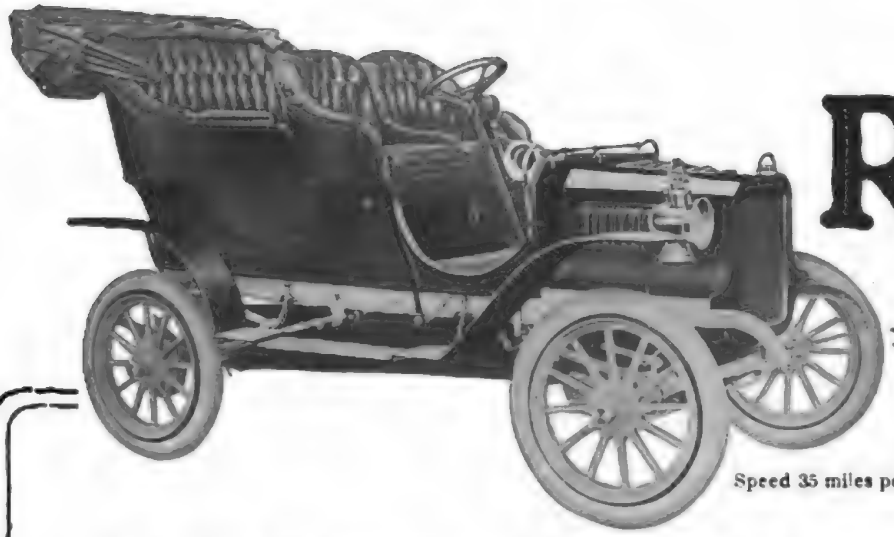
FOUR CYLINDER AIR COOLED

Model Five...28 H. P. Touring Car.....$2500
Model Two... 16 H. P. Touring Car.....$1500
Model Four...16 H. P. Physician's Runabout..$1250

Look us up at the New York and Chicago Shows.

MARION MOTOR CAR COMPANY INDIANAPOLIS INDIANA

We have a few attractive agency propositions still open.



REO

REO 1906 TOURING CAR —16 h. p., 1600 pounds, 90-inch wheel base, 5 passengers, side door detachable tonneau. Speed 35 miles per hour, $1,250.

The REO Bus with exactly the same motor won the National Trophy in the great 6-day Economy Test by carrying its load 682 miles at a total cost of one cent per mile per passenger.

The REO Face

No worry; no mind-strain; no anxiety goes with a REO car.

The few simple operating devices are placed exactly ready to the hands and feet. Every movement is as natural as walking.

The feeling of surplus power under absolute command; the sense of strength, certainty and comfort; the assurance of getting there and back—these make the satisfied expression of the REO face.

Better get it

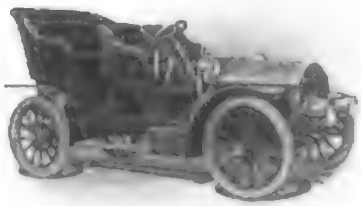
REO 1906 RUNABOUT—8 h. p., 900 pounds, 2 passengers, 25 miles per hour, $650. With folding seat to carry two extra passengers facing forward, $675.

REO Motor Car Co. Sales Department, Lansing, Michigan
R. E. Olds, President R. M. Owen, Sales Mgr.

Agencies throughout the United States

Digitized by Google

Waltham Orient



Waltham-Orient Model R, $2,250.
The Keystone of the Air-cooled Arch.

Friction-drive Buckboard Model BB, $400.
The lowest priced Motor Car made in the World.

The Car of To-day Must do More than Look its Price. The high priced, high powered motor car is all right—it has its place and its purchasers, but the **popular demand** is for a car of moderate price, reasonable speed that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

The Waltham-Orient is the Leading American Car of its Price

Five Touring Models for 1906

Model R, a Swell Special 20 h. p. - - - - -	$2,250
Model N, 20 h. p. Tourist - - - - - - -	2,000
Model L, 16 h. p. Tourist - - - - - - -	1,750
Model M, 16 h. p. Runabout, Detachable Tonneau,	1,750
Model K, 16 h. p. Two-passenger Runabout,	1,600

A Greyhound can run a mile as rapidly as a five thousand dollar Racehorse, and he can course through the sand and up the cliffs where the thoroughbred cannot follow; which only goes to prove that price, bulk, weight and power rating do not necessarily mean the first to finish nor the one to get nearest the top of the mountain.

The Buckboard is the Greyhound of Motor Cars. It makes no pretensions to being the thoroughbred horse. It has no five thousand dollar price tag on it, but is simply in a class of its own, equally a pleasure to its owner, for it serves its purpose and serves it well.

WHY?

BECAUSE: It creates interest quicker than any car you can represent. It conflicts with no other sales. It makes Motorists out of Horsemen and Cyclists. It sells to owners of the "thoroughbreds" for daily service to the station, the country club or the seashore. It sells for Rural Mail Routes, Telephone and Telegraph Linesmen, Parcel Delivery, etc. It requires less time and trouble for each sale, and less subsequent expense and repairs. It has an operating cost less than one-third of any other motor car in the world. It will run 35 miles to the gallon of gasoline, and 100 miles to the pint of oil. It has a maximum power ratio of 40 to 1. No other car exceeds 18 to 1. It will climb 40 per cent official grade and run 30 miles or more per hour. If you will write us we will send you forty other reasons.

We are alive for live agents. Write for specifications and agency proposition.

We will exhibit only at the New York, Chicago and Boston Shows.

DISTRIBUTING DEPOTS

NEW YORK—Waltham Mfg. Co., 1615 Broadway.
BOSTON—Waltham-Orient Motor Car Co., Auto Arcade.
PHILADELPHIA—Martin & Hart Motor Co., 215 N. Broad St.
PROVIDENCE—The Shepard Company.
CHICAGO—The Waltham Motor Car Co., 433 Wabash Ave.
LOS ANGELES—Diamond Motor Car Co., 2604 S. Main St.
BALTIMORE—Auto Supply & Storage Co., 1416 Madison Ave.
CINCINNATI—Queen City Auto Co., 588 West McMicken Ave.

WALTHAM MANUFACTURING COMPANY

GENERAL OFFICES AND FACTORY
WALTHAM, MASSACHUSETTS, U. S. A.
Members of Ass'n Licensed Auto. Mfrs.

ANNOUNCEMENT

The 1906 Model F **Cleveland** 30-35 H. P.

Is now ready for immediate delivery. A demonstrating car is in commission at the salesroom of our General Eastern Distributing Agent, E. B. Gallaher, 228-230 W. 58th St., New York, also at our Cleveland salesroom.

BRING AN EXPERT WITH YOU

NO other American car is made of such uniformly perfect and high-grade material adapted to the purpose, or so thoroughly and intelligently assembled. There is no car on the American market that will stand up to its work so well or so long. Infinite care is exercised in every detail of construction and the **Cleveland** car represents the highest and most advanced ideas in automobile building. It is in a class by itself. The complete chassis of the **Cleveland** car is manufactured by the Garford Company, whose experts have designed and built more high-grade automobile parts and complete chassis than any other concern in America, and the **Cleveland** is, therefore, the product of years of practical experience.

SPECIFICATIONS

ENGINE—30-35 H. P., 4-cylinder, water-cooled.
IGNITION—Simms-Bosch low tension Magneto—make and break ignition.
TRANSMISSION—Sliding train, 3 speeds forward and one reverse.
REAR AXLE—Shaft drive, clutch driven hub. Ball bearings.
FRONT AXLE—I-Beam section. Ball bearings.
FRAME—Cold rolled pressed steel, aluminum under bonnet covering entire engine and transmission.
WHEEL BASE—104 inches.
WHEELS—Imperial whalebone, grade A, second growth hickory.
TIRES—34x4.
VALVES—Mechanically operated, inlet and exhaust interchangeable.
CARBURETOR—Float feed, requiring no adjustment.
BRAKES—Two internal expansion, dust protected, operating on rear hubs through emergency lever, holding either forward or backward. Foot brake operates on propeller shaft. Both brakes bronze against steel.
BODY—Victoria or double phaeton, tulip side entrance.
EQUIPMENT—Two head lights, 1 generator, 2 side lights, 1 rear light, 1 horn, and tools.

Price $3,500 to $5,000, Depending Upon Body Equipment. The 20 H. P. Model D will be continued without change. Price $2,800. Both models guaranteed for one year.

CATALOGUE AND FULL INFORMATION UPON REQUEST.

Cleveland Motor Car Co. DEPT. 5 Cleveland, Ohio

New York, E. B. Gallaher, 228-230 W. 58th St., New York
Gen'l Eastern Distributing Agent

Boston Agent, Butler Motor Car Co., 998 Boylston St., Boston
California Agent, A. P. Worthington, Los Angeles, California

Owing to the unusual interest in the **Cleveland Car**, agents in unassigned territory are advised to enter into early negotiations.

Digitized by Google

Wayne

One of Our 1906 Models

Wayne Model H—$800—Two Passenger Runabout

Motor, 2-cylinder opposed under hood. Cylinders, 4¼x4 developing 14 H. P., water-cooled. Transmission, planetary gears with DIRECT BEVEL GEAR DRIVE. Control is by a single lever which engages the high speed clutch and reverse. The break and slow speed are controlled by foot pedals. Wheels, 28x3. Equipment, complete set of tools.

The strong features of this car are the extreme simplicity of the engine and transmission. The crank case and transmission case form one casting and the entire engine can be taken apart or assembled in half an hour.

Model F 4-cylinder car, cylinder 5¼x5. 50 H. P. Seating 7 people. Price, $3500.

Model K 4-cylinder, five-passenger touring car. 35 H. P. Sliding gear transmission. Price, $2500.

Model B 4-cylinder, five-passenger car. 24-28 H. P. Sliding gear transmission. Price, $2000.

Model C Five-passenger car. Double opposed motor. 20 H. P. Planetary transmission. Price, $1250.

The Wayne Agent can supply a high-grade car at any price his customer may demand.

We have the BEST—Car for the Customer —Proposition for the Agent

Write for Agency arrangements and descriptive matter, if you can't wait till the Shows New York and Chicago Shows, of course, 69th Regiment Armory, New York

WAYNE AUTOMOBILE COMPANY

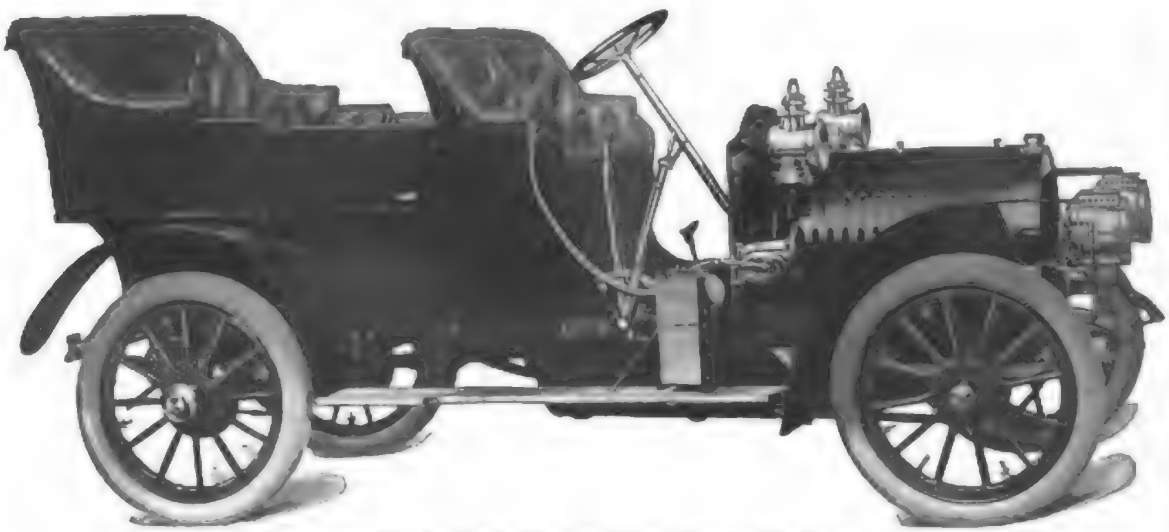
DETROIT, MICHIGAN

THE 1906 MODEL B

Rainier

"THE PULLMAN OF AUTOMOBILES"

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, bevel gear drive. Very large and roomy, full aluminum bodies.



MODEL B RAINIER, 30-35 H. P. PRICE, $4,000.

Guaranteed free of repairs for one year

Do you realize fully the great superiority of the "make and break" over the jump spark?

Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

Learn all about it in our new Bulletin just issued.

THE RAINIER COMPANY, Broadway, Cor. 50th Street, New York

BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY

Good Agents Wanted in Unassigned Territory.

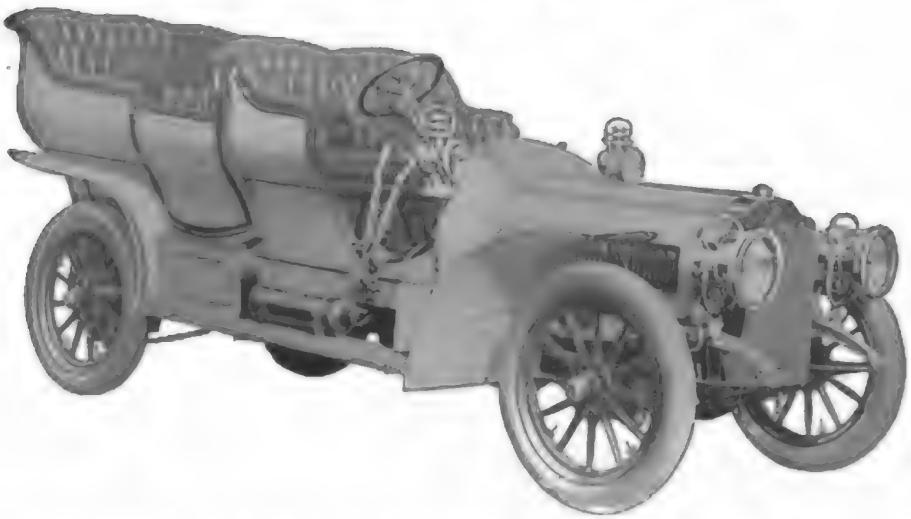
We shall exhibit at the Armory Show in New York.

Digitized by Google

NO—Sixty Miles an Hour is Not Necessary

BUT IT'S SATISFACTION TO KNOW THAT YOU CAN ATTAIN THAT SPEED IF YOU WISH IN THE 50 H. P.

THOMAS



Why do we emphasize the fact that every stock Thomas is guaranteed to show sixty miles an hour before leaving the factory? Not because that is its chief claim upon your consideration. Not because the average owner cares to travel at any such speed. But because the extraordinary efficiency of the Thomas in that respect is merely an indication of its absolute perfection in every other respect.

We believe 50 h. p. to be necessary to the highest degree of smoothness, easy riding and comfort in taking steep grades or rough roads, and picking up speed quickly without changing gear on crowded streets. That's what the Thomas furnishes—full 50 horsepower.

The Thomas does not merely court comparison with the best American Cars—it invites competition for all-around efficiency under any and all conditions with the best cars made anywhere in the world.

The sixty-miles-an-hour guarantee, as we have said is merely incidental to its perfection in every other point.

We would suggest that your investigation be made as early as possible. Even the increased capacity of this great factory will not entirely meet this year's phenomenal demands.

THE E. R. THOMAS MOTOR CO. 1417 Niagara St. Buffalo, N. Y.

Members Association Licensed Automobile Manufacturers.

Digitized by Google

HONORABLE MENTION

SCHEBLER CARBURETORS

STANDARD OF THE WORLD

NATIONAL MOTOR VEHICLE CO.

CABLE ADDRESS "NATIONOMET" INDIANAPOLIS — A.B.C. CODE

Indianapolis, Ind. Nov. 30, 1906.

Mr. F. H. Wheeler,
C I T Y.

Dear Sir:--

The National motor car was equipped with one of your Schebler carbureters during its World's Record travels at the Indianapolis Fair Grounds Track November 16 and 17. During the entire 24 hours continuous running the carbureter never once faltered, but gave a perfect mixture at all engine speeds regardless of day or night temperature. We cannot find words of sufficient praise with which to express our appreciation of its magnificent performance.

Yours very truly,
NATIONAL MOTOR VEHICLE CO.,
Earl H. Martin

WHEELER & SCHEBLER, Mfrs., Indianapolis, Ind., U. S. A.

F. J. DASEY, Factory Representative, 431 Wabash Avenue, Chicago, Illinois. Agencies in all the Principal Cities of the World

E. J. Edmond	44th St. and 6th Ave., New York City	F. C. Rawlins	332 Baronne St., New Orleans
Excelsior Supply Co.	Chicago	Consolidated Supply Co.	Denver
Automobile Supply Co.	Chicago	Chandler & Lyon Motor Sup. Co.	360 Golden Gate Av., San Francisco
Beckley-Ralston Co.	Chicago	Los Angeles Auto Co.	Los Angeles
E. E. Belcher	26 Green St., Malden, Mass.	McCulloch & Boswell	Winnipeg, Man.
Jos. Brassard	Central Falls, R. I.	Wilson & Co.	Ottawa, Ontario, Can.
Ellsworth Foundry & Machine Shop	Ellsworth, Me.	Canada Cycle & Motor Co.	Toronto Junction, Can.
National Electric Supply Co.	Washington, D. C.	Schuman Carriage Co.	Honolulu, T. H.
Smith Electrical Engineering Co.	Watertown, N. Y.	Turnbull & Jones	Dunedin, N. Z.
The Wallace Bros. Co.	Norfolk, Va.	Geo. Snell & Co.	38 Fenchurch St., London, England
N. Philadelphia Auto Station	3425 N. Broad St., Philadelphia	Du Bois Motor Co.	Detroit, Mich.

Digitized by Google

APPERSON

50-55 H. P. Car With Special Body. Price on Application.

Apperson Bros. Build Special Cars

For those who want the best. We only build fine, high-priced cars and each car is given personal attention not given in factories where cars are turned out by the hundred. We make practically every part of our cars in our own factory. No hand-me-down material made by parts makers will be found in our product.

BRANCH HOUSES:

BOSTON: 43 Columbus Ave.
NEW YORK: 66 West 43d St.
PHILADELPHIA: 326 N. Broad St.
CHICAGO: 394 Wabash Ave.

Apperson Bros. Automobile Co.

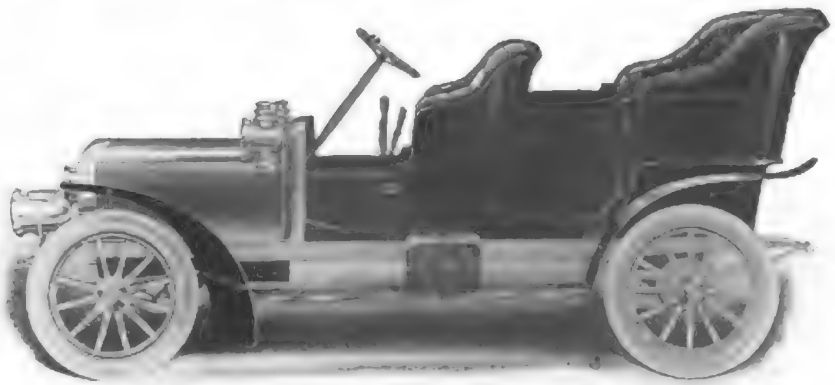
Members Association Licensed Automobile Manufacturers.

KOKOMO, INDIANA

Digitized by Google

Aerocar

The Car of to-day, to-morrow and the years to come,
—Built by practical men.—



Here is the **one** motor car driven by a reliable, test-proven air-cooled motor.

The vital factor in every motor car is the motor.

All Automobile authorities—people who have had most experience—concede that many improvements are necessary in water cooled motors—too many mechanical complications, too much weight, too many troubles.

The same authorities agree that in the reliable, success-proven air-cooled motor lies the solution of most all motor car troubles.

The **Aerocar** has such an air-cooled motor. It has taken eight years of continual efforts, experimenting, testing, proving and many thousands of dollars to produce this reliable air-cooled motor, but the results sought have been secured, and they are well worth all the time, labor, and money expended.

The air-cooled motor of the **Aerocar** is of wonderful efficiency in power. Runs with the uniform smoothness and rhythm of an electric dynamo—under all climatic conditions, over all sorts of roads. Has strength of construction with simplicity of control, giving great durability of service, develops continuous higher power for weight, and gives greater speed than any other motor.

In the necessary, the vital qualities for satisfactory service, the air-cooled motor of the **Aerocar** is supreme—in a class by itself—the motor that "motes" when you want it to serve you.

The body of the **Aerocar** compares most favorably with any car either foreign or American. It embodies the best features of each, is graceful in line, is luxuriously roomy and comfortable; is finished and upholstered strictly up-to-date.

Aerocar 1906. 24 h. p. Four cylinders. Five passengers. 45 miles an hour. 104-inch wheel base. Shaft drive. Sliding gear transmission. Three speeds forward and reverse. Leather-faced cone clutch. Hollow steel dash. Four sight lubricator on dash. Tool box on running board. 34x4 tires. 9-inch road clearance. Weight 2,000 pounds. Fully equipped, ready for the road, including two large gas headlights, $2,800 f. o. b. Detroit.

Will be exhibited and demonstrated at the Automobile Shows in New York and Chicago.

The dealer who has the selling agency of the **Aerocar** will have a gold mine. Territory being rapidly taken up. If interested write us promptly.

The AEROCAR COMPANY, Detroit, Mich.

Digitized by Google

The NATIONAL SHOW Feb. 3-10, 1906

WILL BE HELD AT

CHICAGO

Completely filling 100,000 square feet of space afforded by the COLISEUM AND FIRST REGT. ARMORY

LIST OF EXHIBITORS

AUTOMOBILES

Aerocar Company.
American Motor Car Co.
Adams Co. (The).
Acme Motor Car Co.
Auto. Importing Co.
American Locomotive Motor Car Co.
American Motor Truck Co.
Archer & Co.
Auburn Automobile Co.
Austin Automobile Co.
Apperson Bros. Auto. Co.
Autocar Co.
Baker Motor Vehicle Co.
Bartholomew Co. (The).
Berkshire Automobile Co.
Blomstrom Motor Co., C. H.
Buffalo Electric Carriage Co.
Buckeye Mfg. Co.
Buick Motor Co.
Cadillac Auto. Co.
Corbin Motor Vehicle Co.
Chicago Automobile Mfg. Co.
Chicago Pneumatic Tool Co.
Cleveland Motor Car Co.
Columbus Buggy Co.
Duryea Power Co.
Dolson & Sons, John L.
Daimler Mfg. Co.
Dayton Motor Car Co.
Dorris Motor Car Co.
Electric Vehicle Co.
Elmore Mfg. Co.
English Daimler Co.
Franklin Mfg. Co., H. H.
Ford Motor Co.
Harrison Wagon Co.
Haynes Automobile Co.
Holsman Automobile Co. (The).
Jeffery & Co., Thomas B.
Jackson Automobile Co.
Knox Automobile Co.
Knight & Kilbourne.
Kansas City Motor Car Co.
Locomobile Co. of America.
Logan Construction Co.
Lozier Motor Co.
Lear, Oscar, Automobile Co.
Mitchell Motor Car Co.
Moon Motor Car Co.
Marion Motor Car Co.
Maxwell-Briscoe Motor Co.
Moline Automobile Co.
McCrea Motor Truck Co.
Motorcar Company.
Michaels Co., H. Sargent.
National Motor Vehicle Co.
Northern Mfg. Co.
Nordyke & Marmon Co.
Olds Motor Works.
Palais de l'Automobile.
Panhard & Levassor.
Packard Motor Car Co.
Peerless Motor Car Co.
Pierce Co., George N.
Pope Mfg. Co.
Premier Motor Mfg. Co.
Pierce Engine Co.
Pungs-Finch Auto. & Gasoline Engine Co.
Reliance Motor Car Co.
Royal Motor Car Co.
Reo Motor Car Co.
Rapid Motor Vehicle Co.
Rainier Co. (The).
Stearns Co., F. B.
Stevens Arms & Tool Co., J.
St. Louis Motor Car Co.
Studebaker Automobile Co.
Synnestvedt Machine Co.
Smith & Mabley, Inc.
Soules Motor Car Co.
Temple, Ralph.
Thomas Motor Co., E. R.
Tincher Motor Car Co.
Vehicle Equipment Co.
Waltham Mfg. Co.
Wayne Automobile Co.
White Sewing Machine Co.
Woods Motor Vehicle Co.
Winton Motor Carriage Co.
Windsor Automobile Co.
Welch Motor Vehicle Co.
Werner, Oscar.
Western Tool Works.

ACCESSORIES

American Electric Novelty & Mfg. Co.
American Lamp Co.
Arnstein, Eugene.
Atwood Mfg. Co.
Aurora Automatic Machine Co.
Automobile Supply Co.
Autocoil Co.
Auto Accessories Mfg. Co.
Automobile, The.
Badger Brass Mfg. Co.
Baldwin Chain & Mfg. Co.
Beckley-Ralston Co.
Belden Auto. Transmission Co.
Brown-Lipe Gear Co.
Brennan Mfg. Co.
Brown, Wm. H.
Bowser & Co., S. F.
Briscoe Mfg. Co.
Byrne Kingston & Co.
Chicago Battery Co.
Chicago Caloric Engine Co.
Cook Rly. Track Appliance Co.
Continental Caoutchouc Co.
Cullman Wheel Co.
Consolidated Mfg. Co.
Culver Novelty Co.
Cycle & Auto. Trade Journal.
Dac Automobile Supply House.
Dayton Folding Tonneau Co.
Detroit Motor Car Supply Co.
Detroit Steel Products Co.
Diamond Rubber Co.
Dixon Crucible Co., Joseph.
Diamond Chain & Mfg. Co.
Dietz Co., R. E.
Dayton Electrical Mfg. Co. (The).
Duff Mfg. Co.
Duplex Coil Co.
Edmunds & Jones Mfg. Co.
Excelsior Supply Co.
Firestone Tire & Rubber Co.
Fisk Rubber Co. (The).
Gabriel Horn Mfg. Co.
Gaulois Tire Co.
Gearless Transmission Co.
Goodrich Co., B. F. (The).
Goodyear Tire & Rubber Co. (The).
Gray & Davis.
G. & J. Tire Co.
Hancock Mfg. Co.
Hartford Suspension Co.
Harris Oil Co., A. W.
Hardy Co. (The).
Hartford Rubber Works Co. (The).
Hendee Mfg. Co.
Hicks Speed Indicator Co.
Hine-Watt Mfg. Co.
Horseless Age.
Hutchinson Electric Horn Co.
Hyatt Roller Bearing Co.
Imperial Brass Mfg. Co.
International A. & V. Tire Co.
Jones Speedometer.
Kinsey Mfg. Co.
Knoblock-Heideman Mfg. Co.
Limousine & Carriage Mfg. Co.
London Automobile Supply Co.
Long Mfg. Co.
Look Electric Co.
Manhattan Storage Co.
Madison-Kipp Mfg. Co.
McGlehan Mfg. Co.
McCord & Co.
McKeague, J. B.
Milwaukee Rubber Works Co.
Michelin Tire American Agency.
Morgan & Wright.
Motor Age.
Motor Car Equipment Co.
Motsinger Device Mfg. Co.
N. Y. & N. J. Lubricants Co.
National Carbon Co.
North Chicago Machine Co.
Oliver Mfg. Co.
Pennsylvania Rubber Co. (The).
Pantasote Co. (The).
Prest-O-Lite Co. (The).
Prosser, Thomas, & Sons.
Reilly, P., & Son.
Remy Elec. Co.
Republic Rubber Co.
Rose Mfg. Co.
Railway Appliances Co.
Sherwin-Williams Co.
Samson Leather Tire Co.
Standard Carriage Lamp Co.
Spicer Universal Joint Mfg. Co.
Swinehart Clincher Tire & Rubber Co.
Standard Oil Co.
Standard Roller Bearing Co.
Schwartz Wheel Co.
Splitdorf, C. F.
Shelby Steel Tube Co.
Speed Changing Pulley Co.
Sprague Umbrella Co.
Steel Ball Co.
Timken Roller Bearing & Axle Co.
Tokeim Mfg. Co. (The).
Tritt Electric Co.
Teel, E., & Co.
Universal Storage Battery Co.
Valentine & Co.
Veeder Mfg. Co. (The).
Ventilated Cushion Co.
Volta Battery Co.
Vesta Accumulator Co.
Way Muffler Co.
Weed Chain Tire Grip Co.
Wheeler Mfg. Co.
Webb Co. (The).
Warner Gear Co.
Warner Instrument Co.
Whiteley Steel Co.
Whitney Mfg. Co. (The).
Wray Pump & Register Co.

An Open Show. A Complete Show. One admission fee to both buildings.

Usual courtesies to dealers, at morning sessions, application for which must be made at the office in First Regiment Armory. Further details of

S. A. MILES, Manager

New Southern Hotel, Chicago.

Digitized by Google

INDIANAPOLIS DUNLOP TIRE

Open Steam Cured Fitted with Flap Wide Edges

¶ This tire is fitted with a flap, which protects the air tube from screw heads in the rim and from moisture, and does away with the necessity of fabric-covered tubes. The special edges and the flap constrict against the channel of the rim in such a way as to prevent creeping. It is entirely open steam-cured, which gives the tire exceptional strength. For full information apply to any of the following addresses:

INDIANAPOLIS,
549 East Georgia Street

CHICAGO	DENVER
429 Wabash Avenue	1528 Court Place
DETROIT	MINNEAPOLIS
247 Jefferson Avenue	21 South Second Street
BOSTON	SAN FRANCISCO
43 Columbus Avenue	327 Van Ness Avenue
BUFFALO	PORTLAND
9 West Huron Street	64 Sixth Street
CLEVELAND	LOS ANGELES
337 Huron Street	1038 South Main Street

National RELIABILITY

Was demonstrated in the most convincing manner at Indianapolis, on Nov. 16-17, 1905, when a **National Stock Car** made

1094 3-16 MILES IN 24 HOURS

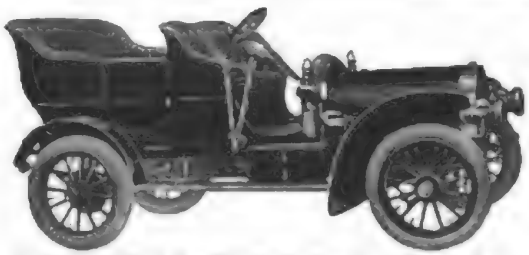
Breaking the World's Record by 78 9-16 Miles

At the **NEW YORK SHOW** 69th Regiment Armory Jan. 13th to 20th

WATCH FOR THE ROUND RADIATOR

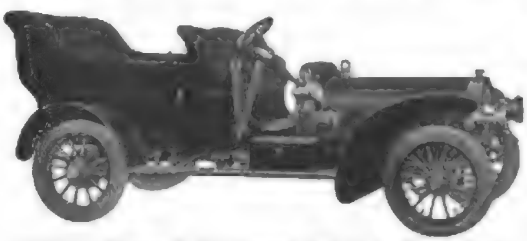
AND

At the **CHICAGO SHOW** Coliseum Spaces 77-78-79 Feb. 3d to 10th



NATIONAL MODEL D, 4-CYLINDER, 35-40 H. P. PRICE, $3,000.

The Car That Broke the World's Records



NATIONAL MODEL E, 6-CYLINDER, 50-60 H. P. PRICE, $4,000.

An Innovation in Touring Cars

Stylish, powerful, smooth running, easily controlled. Aluminum body, seats seven passengers. ALL FACING FORWARD.

Write for particulars

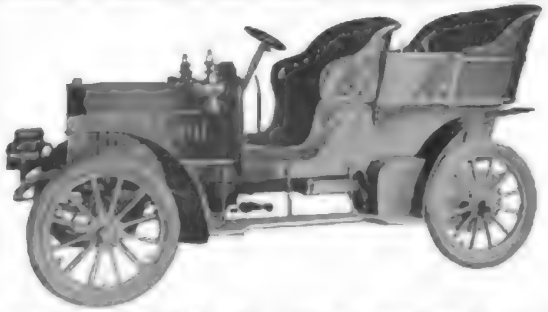
NATIONAL MOTOR VEHICLE CO.

1006 E. 22d St. INDIANAPOLIS, IND.

DISTRIBUTORS—Linscott Motor Co., 163 Columbus Ave., Boston; Homan & Schulz Co., 38th & Broadway, New York; Ralph Temple Auto Co., 311 Michigan Ave., Chicago; Tioga Auto Co., Broad & Tioga Sts., Philadelphia; The Fisher Auto Co., 330 N. Illinois St., Indianapolis; Liberty Auto Co., 158 Beatty St., Pittsburg; Colonial Auto Co., 3044 Olive St., St. Louis.

Members American Motor Car Manufacturers' Association, Chicago.

THE 1906 CRAWFORD TOURING CAR



FINEST CAR IN THE WORLD AT

$2000

A Perfect Car at a Popular Price

SPECIFICATIONS COMPLETE

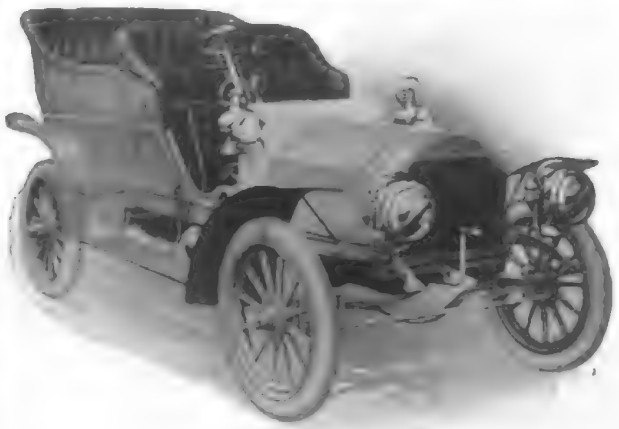
MOTOR: Four-cylinder, upright, water-cooled, 4½ by 4½ individual cylinders. 24-28 Horsepower.
CRANK SHAFT: Four throw, bearing in five bronze bushings aggregating 14½ inches.
CRANK CASE: Removable without disturbing adjustments.
WHEEL BASE: 100 inches; tread 56 inches.
WHEELS: 34-inch, wood, artillery type, on large ball bearings.
TIRES: Optional; regular clincher or mechanically attached.
DRIVE: Double chain on generous-sized sprockets.
TRANSMISSION: Selective sliding gear set, three forward speeds, one lever control, ball bearings.
BEARINGS: Ball bearings throughout.
BRAKES: Two powerful brakes on rear hub, with set lever. Two band brakes operated by foot on cross shafts.
LUBRICATION: Force feed lubricator.
FRAME: Deep section pressed steel sides, with an angle iron sub frame brazed up to carry motor and transmission, which are connected by double universal joint.
CLUTCH: Of inverted type, made dust-proof by leather diaphragm and operated by foot lever.
IGNITION: Jump spark, with four coils on dash.
CONTROL: Throttle and spark.
SPEED: 36 miles, approximate maximum.
WEIGHT: 2100 lbs.
TANK CAPACITY: 14 gallons.
STEERING GEAR: Wheel and pinion.
AXLES: Large sized tubing.

SEE US at the A. C. A. SHOW in 69th Reg. Armory NEW YORK

CORRESPONDENCE SOLICITED

Crawford Automobile Co.

HAGERSTOWN, MD.



Again—"As good as it looks"

Stoddard-Dayton

MODEL D

Touring Car

has more than beauty-lines to recommend it.

But, if you will look at its picture above, you are bound to agree that it is just about the handsomest, trimmest, most luxuriously-inviting vehicle that four wheels ever carried.

Note the exquisite modeling of the body, the clean, symmetrical lines of the frame, the vigorous and altogether stunning effect of the entire car.

Note—you cannot see it in the cut, but in the car itself—the delicate pearl-gray of its finish (16 paintings to attain *that* lustre!) See how this Quaker garb is relieved by the effective contrast of rich tan upholstering. Other colors optional with purchaser.

And then remember that artistic appearance is the *least* of the Stoddard-Dayton's virtues.

It IS *"as good as it looks."*

Every Stoddard-Dayton car *must* perform, and proves its *ability* to perform, before it leaves our factory. This is done by exacting block tests for motor, and road tests for car before final finish is applied.

The Stoddard-Dayton Model D, 5-passenger touring car has a special type of 4½x5 in. 4-cylinder motor; water-cooled; frame of hot-rolled, high carbon, pressed steel; sliding gear transmission, three speeds and reverse—selective type, can be changed instantly from high to intermediate, or vice versa, at speed of 25 miles, up hill or down, without clashing or friction; practically noiseless; entire transmission on roller bearings; mechanical lubrication; 30-35 horse power. Proportion of power to weight, one horse power to every sixty pounds. $2,250. Immediate delivery.

Write for our 1906 catalogue. It's full of interest to every motorist. Sent *free* on request.

The Dayton Motor Car Co.

DAYTON, OHIO

AGENCIES IN THE FOLLOWING CITIES:

McDuffee Automobile Co., 1440 Michigan Avenue, Chicago; Stoddard-Dayton Agency, 1853 Broadway, New York; Hamilton Automobile Co., 200 North Broad, Philadelphia; Central Automobile Co., 5089 Centre Avenue, Pittsburg; J. A. Cramer, 737 Main Street, Buffalo; Randliff Motor Car Co., 24 Columbus Avenue, Boston; Colonial Automobile Co., 3944 Olive Street, St. Louis; Dwright Automobile Co., Omaha; H. S. Moore, 100 Crawford Road, Cleveland; Automobile and Supply Co., 24 Temperance Street, Toronto; Norman W. Church, Hellman Building, Los Angeles, Cal.; Haynes Automobile Co., 229 South 6th Street, Minneapolis; C. M. Wood, Denver; Fisher Automobile Co., 330 North Illinois Street, Indianapolis.

Digitized by Google

The Simplest Engine in the World

THE TWO-CYCLE ELMORE

When you understand that the two-cycle Elmore engine does away with 18 to 20 parts on each of the four cylinders; and absolutely eliminates all inlet and exhaust valves, with their attendant mechanism, you'll agree with us, won't you, that this is the simplest engine in the world?

Do we need to point out that this also reduces the cost of operation and upkeep to the minimum and makes the Elmore the most economical as well as the simplest of engines in the world?

From whatever standpoint you examine the two-cycle Elmore, equally impressive and sensational features present themselves. The four-cylinder car produces approximately as much power as would eight cylinders of the four-cycle type—produces it in a continuous and unbroken application that will carry the car **indefinitely on the high speed** under any and all road-conditions.

Again—it is the most successful self-starting engine in the world. Again—you can cut out one, two or three cylinders at will, both spark and gasoline. With one cylinder cut out the difference is imperceptible except in speed; with two out—barely noticeable. Do you see the economy of this?

Again—you can throttle the Elmore engine on the high speed down to **two** miles an hour. Again—the Elmore will take a 16 per cent grade on the high speed with approximately as much ease as it travels on the level road.

It starts with a smooth, gliding motion that is delightful; and dips down and over uneven spots with a minimum of jolt or jar.

The four-cylinder Elmore at $2,500.00 and the two-cylinder Elmore at $1,500.00 are two cars whose manifold exclusive features demand your most serious consideration. Learn all the wonders of the two-cycle type by getting in touch with the nearest Elmore agent or by writing for our new descriptive catalogue and books of information.

The Elmore Mfg. Co.

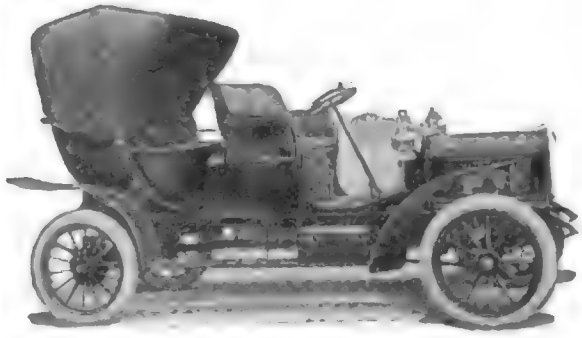
804 Amanda Street, Clyde, Ohio

MEMBERS A. L. A. M.

THE INCOMPARABLE

WHITE

THE CAR FOR SERVICE



THE REASON WHY

People often inquire, "Why is it that the longest tours, the hardest tours, the pioneer tours, the most interesting tours are made in White Steamers?" The answer is simple: because our standing has always been to design a car for extraordinary road conditions. That is why the White cars go ahead where other cars, designed only for ordinary road conditions, turn back. Another reason is that steam power, as utilized in the White car, possesses certain inherent advantages which cannot be realized through the use of other motive powers, no matter how highly developed the mechanism may be.

That readable publication, the White Bulletin, describes graphically some of the more notable tours of recent years, with maps and other data of interest to all tourists. If you have not seen the last three or four issues, it would be worth your while to send us a postal asking for them.

We will exhibit at the Armory show in New York.

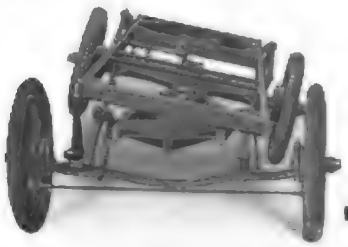
WHITE SEWING MACHINE COMPANY

CLEVELAND, OHIO

Digitized by Google

THE MARMON

"A Mechanical Masterpiece"



Can Your Car Do This?

This is a good question to ask the demonstrator before buying.

In most of our illustrations we have used a view showing a front wheel raised, tilting the lower frame, but leaving the body frame level.

This shows a rear wheel raised over a foot, tilting the body frame, but leaving the lower frame level.

All roads afford many parallels for this condition.

Observe that raising one wheel does not affect the other three wheels in the slightest. Observe that no matter what wheels are raised, no matter which frame is tilted, the power plant and rear axle are maintained in perfect alignment, doing full duty without strain or undue friction in any part.

Another point, it is not left to the springs and tires to bear the shocks entirely. The flexibility of the gear relieves them to a remarkable degree. Nor do the springs bear the driving strain, as this is direct from rear to front axle through radius rods.

Any Marmon owner knows, when he is speeding along over rough roads with an easy, gentle sway unknown in any other car, that the entire mechanism is equally at ease, conserved for a long and useful life.

The reason for this important elasticity lies in no mere combination of springs, but in the exclusive patented feature

Double Three-Point Suspension

Luxurious cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. Eliminates the binding and twisting strains inevitable in the rigid suspension of all other cars; means simpler parts, fewer parts and less wear on all parts, tires included. A straight, rigid shaft drive without Cardan joints and an inner driving axle that bears no weight, deliver a greater percentage of the power of the motor to the wheels, than is possible in any other scheme of transmission.

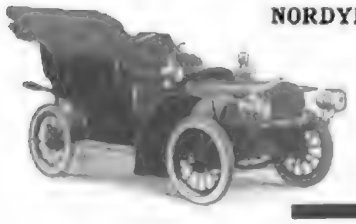
The Marmon four-cylinder motor never overheats or "sticks," due to perfect air-cooling and an oiling system that is unlike any other and superior to any other the world over.

The Marmon is stylish, strikingly handsome, and very quiet. It is replete with distinctive features that appeal instantly and forcefully to all who seek a strictly high-grade car.

Write for Booklet No. 1 and become posted on a real Twentieth Century Automobile.

We shall demonstrate at the Armory Show, New York.

Four Cylinders Air Cooled { Model C, Four Passengers, $2,500 / Model D, Five Passengers, 3,000



NORDYKE & MARMON CO.

Established 1851

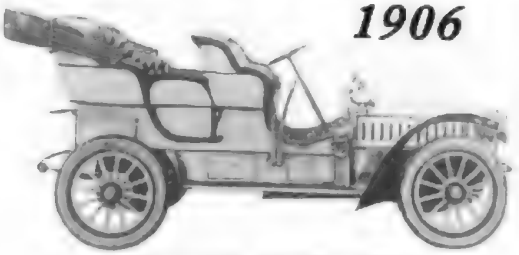
Indianapolis, Ind.

Members American Motor Car Manufacturers' Association

"Sixty Miles an Hour"

The Austin

1906



Model LX. Touring Car

Finished in White with Tan Trimmings—an aristocratic effect

60 H. P. $4,500

Capacity, 5 persons EASILY. Wheel base, 109 inches. Four cylinders. Water cooled. Four forward speeds. Brakes to rear wheels and on driving shaft. Irreversible steering.

Two Separate Complete Ignition Systems.

High tension magnets on one set of plugs, and batteries and vibrating coil on another set of plugs.

"You can't go wrong if you select an Austin"

Send for Catalogue that talks

Austin Automobile Co.

Grand Rapids, Mich.

Automobile Knowledge

means

Money In Your Pocket

We are the only school that provides complete, practical, *money-earning* and *money-saving* training by mail in operating, repairing, constructing, and designing every kind of motor vehicle and motor boat.

We have special courses for *owners*, shop and factory *employees*, *chauffeurs*, *motor boat* and *motorcycle users*, and *others*.

There are only two ways of learning anything. One is slowly and tediously to gain the experience yourself; the other (and better) way is to take advantage of the experience of others.

Though we offer you the long, hard-learned, thorough experience of experts who have done prominent work in the development of the new vehicle, we offer this experience in such form that to teach it to you will take only a few minutes and cost only a few cents each day—*the few minutes and the few cents that you ordinarily waste.*

Our instruction has been prepared and is conducted by well-known men, of long experience and proved ability both in automobile engineering and correspondence instruction. It is strongly endorsed by *prominent manufacturers*, *club* and *association officials*, *racing men*, *trade-paper editors*, and others whose standing in the automobile field lends authority to what they say.

In the automobile industry, the demand for competent men is so great that ability, no matter how acquired, is considered above "pull" and length of service. This makes it easy for an ambitious man to qualify quickly for good wages and prompt advancement.

For further information, send us your name on the accompanying coupon. This will cost you only a moment of time and a postage stamp, which will be well spent for interesting and convincing literature.

FILL OUT TEAR OFF MAIL TO-DAY

The Correspondence School of Automobile Engineering

Suite 1346 Flatiron Building, New York City

Please send to my address by return mail, a free circular, giving full particulars of your correspondence courses.

Name.....

Street and No.....

City..... State.....

or write for circular without sending coupon

Digitized by Google

A ONE CURE TIRE
With Wrapped Tread

LONG SOUGHT
SUCCESSFULLY ACHIEVED

1906

Hartford DUNLOP CLINCHER Tires

Will be so produced at

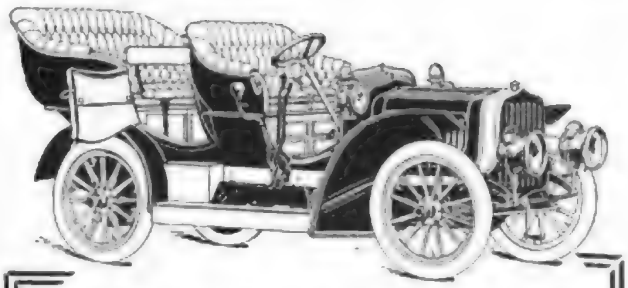
ONE VULCANIZATION

Both types will fit

The Hartford Universal Rim

The Hartford
Rubber Works Company

Hartford ... Conn.



POPE-TOLEDO

Type XII. 35-40 Horse-Power. Price, $3500

THIS car is absolutely the FASTEST and most POWERFUL touring car ever built. Think of a STOCK car with regular gearing doing 76 miles an hour. Isn't this convincing that the power the POPE-TOLEDO motor develops is transmitted to the wheels? TYPE XII will carry seven people at 30 miles an hour, and its noiseless, smooth-running engine will be scarcely more exerted than when idling.

Car has 54 pounds of total weight per horse power, only 10 8-10 pounds engine weight per horse-power.

The wheel base is only 104 inches. Yet the car seats comfortably seven people, with room to spare.

Double Direct Outside Chain Drive, of course; and a TRANSMISSION made of specially treated steel of 225,000 pounds tensile strength, the strongest, most efficient, smoothest running transmission ever constructed.

Send for catalogue of

	PRICE
20-25 H. P. Double Side Entrance,	$2800
30-35 H. P. Front Entrance,	3200
35-40 H. P. Double Side Entrance,	3500
50-60 H. P. Double Side Entrance,	6000

Order NOW for early delivery

Be sure the name "POPE" is on your automobile

Pope Motor Car Company

TOLEDO, OHIO

NEW YORK CITY . . . . 1733 Broadway
BOSTON, MASS. . . . . 223 Columbus Avenue
WASHINGTON, D. C. . 819-14th Street N. W.

Members Association Licensed Automobile Manufacturers.

Digitized by Google

BAKER ELECTRICS The ARISTOCRATS OF MOTORDOM

Imperials...Stanhopes...Surreys...Depot Carriages...Broughams

Our Depot Carriage is the acme of refined, quiet elegance. Its every appointment is correct. Its finish and upholstery are the best that money can buy and the most skillful labor execute **by hand.** Its mechanical construction is as nearly perfect as long experience in the manufacture of electric vehicles enables us to make it.

All **BAKER ELECTRICS** are extremely light in weight, yet made from such carefully selected materials, with the utmost care and attention to every detail that they are extremely efficient and durable.

The absolute simplicity of operation and ease of control adapts **BAKER VEHICLES** for the use of anyone and a skilled chauffeur is never necessary.

We desire agents in a few important cities not yet covered and will be pleased to correspond with all who care to arrange for the best and easiest selling line of vehicles in the market.

The Baker Motor Vehicle Co. 24 Jessie Street **Cleveland, O.**

"THE OLD SHOW IN THE NEW ARMORY."

THE OPEN EXPOSITION OF A GREAT INDUSTRY

SIXTH ANNUAL

Automobile Show

OF THE

Automobile Club of America

Sixty-Ninth Regiment New Armory

Twenty-Sixth Street, Near Fourth Avenue

NEW YORK CITY

January 13 to 20, 1906

Leading American and Foreign Exhibitors

Gasoline—Steam—Electricity

Digitized by Google

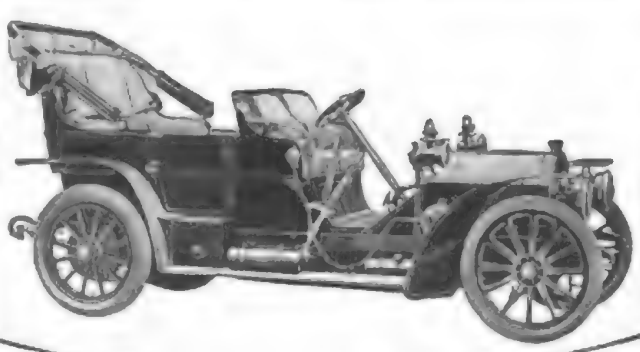
896

Wheels were fitted with **CONTINENTAL TIRES** at the Paris Automobile Salon, December, 1905. Other tires represented were 676, 361 and 252 respectively.

Paris is the world's market for the greatest number of high-grade automobiles and since the French manufacturers thus recognize a German tire, the reason therefor is self-evident. YOUR tire equipment for 1906 should be **CONTINENTAL.**

THE CONTINENTAL CAOUTCHOUC CO.
EMIL GROSSMAN, Gen. Mgr.
43 WARREN ST., NEW YORK
Factory: Hanover, Germany

WE WILL EXHIBIT at Madison Square Garden, New York, January 13-20, 1906, Space 147; 69th Regiment Armory, New York, January 13-20, 1906, room "I;" Coliseum, Chicago, February 3-10, 1906, spaces 274-278.



American Mercedes

IF YOU WANT A MERCEDES

Buy it Here and Save the Duty

All the speed, all the strength, all the lightness and all the beauty of the imported 1906 Mercedes are repeated in the 1906 American Mercedes.

Every working part in the one has its counterpart in the other. No test of endurance that can be applied to these two cars will bring out a difference between them. Every patent, every device, every method of construction used by the Daimler Motoren Gesellschaft in building the Mercedes is used by us in building the American Mercedes.

We have the sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company.

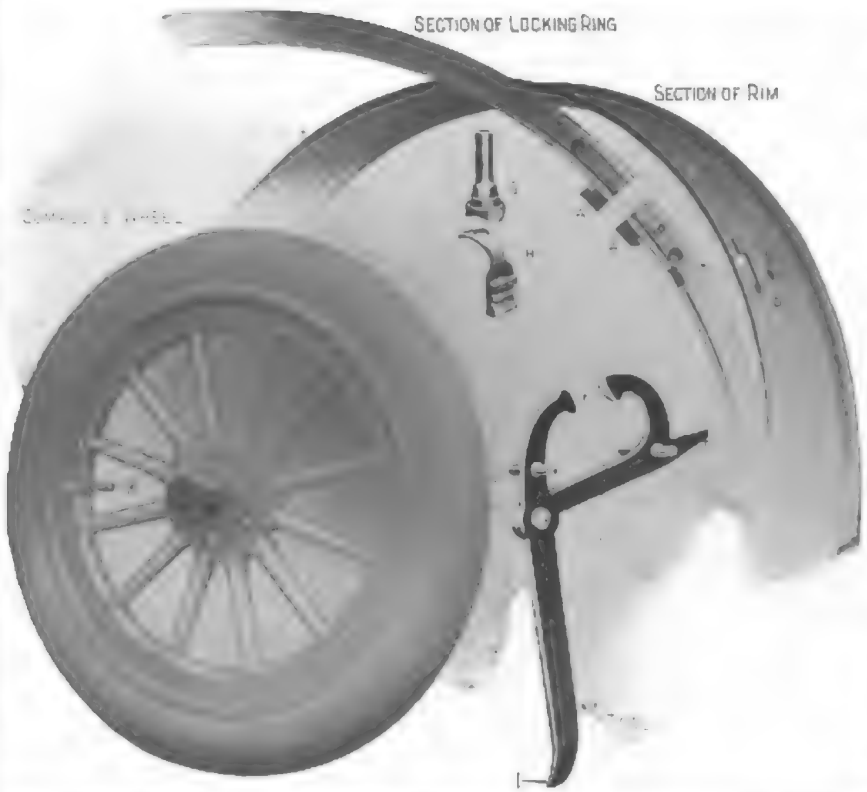
Through the rights granted us by our parent Company, the Daimler Motoren Gesellschaft, we have during the past year convinced the most prejudiced and skeptical buyers of foreign automobiles that the American Mercedes is the equal in every respect of its counterpart, the imported Mercedes.

There is only one difference — you save the duty.

The 1906 American Mercedes will be exhibited at the Automobile Show.

DAIMLER MANUFACTURING CO.,
N. Y. City Garage, 10 West 60th St. 973 Steinway Ave., LONG ISLAND CITY, N. Y.

Digitized by Google



Your Tire Off and On in Less than a Minute

Tells exactly what is accomplished by means of the

Goodrich Quick Detachable Construction

And a visit to our Exhibit at the New York Automobile Show, Madison Square Garden, will afford you the opportunity to see our claims proved.

Perhaps you may wish to make dead sure and detach and attach the tire yourself. It is a pleasant little pastime with all the old time hard work features cut out. You will enjoy the experience and be impressed with the fact that the Goodrich Quick Detachable Tire and Rim is a great achievement in automobile tire building.

Space in Central Boxes directly over Madison Square entrance.

The B. F. Goodrich Company, Akron, O.

New York, 66-68 Reade St. and 1625 Broadway
Buffalo, 731 Main Street
San Francisco, 302 Mission Street
Boston, 161 Columbus Avenue
Philadelphia, 900 Arch Street
Cleveland, 416 Erie Street
Chicago, 141 Lake Street
Detroit, 80 East Congress Street
Denver, 1443 Curtis Street
London, E. C., 7 Snow Hill

Compound Doctor's Stanhope

JOSEPH E. ROOT, M. D.
67 Pearl Street HARTFORD, CONN.

December 12, 1905.

Mr. Schull, Mgr. E. H. V. Co:

Dear Sir—I thought it might be of interest to you to know how my "Doctor's Stanhope" was progressing.

I am pleased to voluntarily state that it is way beyond my expectations, high as they were. You understand I'm a "greenhorn" at running a motor car, and it's pulled me every day in town and out—on my professional rounds—always brings me home—never has had to go to a garage or repair shop for adjustments, etc.—goes through the cold and snow (the latter with chains on) just the same. It continues to ride as easy and warm as a hack. My total running expenses for my first month, ending December 8th, were $8.86. Upwards of six hundred (600) miles were covered.

Thanking you for furnishing me such a competent, durable and elegant machine, I am, Yours, etc.,

JOSEPH E. ROOT, M. D.

12-15 H. P., $1,400

THE E. H. V. CO., Middletown, Conn.

Digitized by Google

HAYNES

HAS AN EXCLUSIVE TRANSMISSION

If an automobile weighing 2,750 pounds, plus the weight of five passengers, is dropped over a sheer embankment of 7 feet, the machinery will receive a shock of just the same severity as if suddenly checked by shifting from high speed gear at 30 miles per hour to middle speed gear at 15 miles per hour. In the latter case the engine must act as a brake, and the entire machine is severely strained.

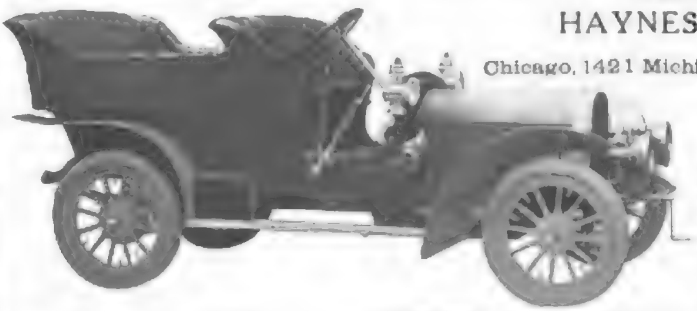
With the Haynes transmission, this cannot occur. A ratchet and pawl device permit the car to coast until the speed of the car and engine are relatively equal, when the pawls engage and the engines take up the load. While making the change in speed from high to middle or from high to low, the gears are running idle, permitting the operator to shift with perfect ease and without danger of burring or stripping the gears.

With all forms of transmission except the Haynes, the shock of sudden change of gears may be, and frequently is, thrown upon the machine, a thing impossible in the Haynes car and one of the reasons why Haynes cars are so long lived and cost so little for repairs and up-keep.

This is but one of the exclusive features of the Haynes. Others are its Roller-Bearing Engines, Master Clutch, Universal Joints that do away with wear on pins, Driving Sprocket and Roller Pinion, etc. There is perfect harmony throughout its entire mechanism, which makes its cost of operation, up-keep and maintenance extremely low.

It is perfectly finished in all respects. Only the best of materials are used. Body is of cast aluminum and wood, designed by a leading Parisian body maker. Hand-buffed leather and gray curled hair are used in upholstering. Other exclusive features are given in our new catalogue. For prompt attention address Desk 25.

"The Car the Repairman Seldom Sees"



HAYNES AUTOMOBILE COMPANY
KOKOMO, INDIANA
Chicago, 1421 Michigan Ave. New York, 1715 Broadway

MEMBERS A. L. A. M.

MODEL R—FOUR-CYLINDER TOURING CAR

Vertical roller-bearing engines. Cylinders cast separately, 5¼ x 6 inches, 50 H. P. An exclusive transmission that absolutely prevents stripping of gears. Positive cooling system. Individual and special lubrication. Master clutch has metal faces and takes hold without jerking. Shaft drive. Exclusive universal joints that prevent wear on pins. Sprocket and Roller Pinion and perfect Rear Axle, all exclusive. Roller-bearings throughout. 108-inch wheel base. 54-inch tonneau, seating five people. Four to sixty miles an hour on high gear. Weight, 2,750 pounds. Price, $3,500, f.o.b. Kokomo. Full equipment.

We believe that a very large portion of the tire-trouble suffered by motorists is due to their ignorance in regard to the care and proper manipulation necessary for the preservation of motor-tires.

We also believe that, with the proper encouragement and instruction from the manufacturer, the driver of a car can materially reduce his tire-expense, which is now so large an item in the cost of operation.

We have, therefore, decided to offer cash prizes to the amount of

$1000.00

for a ***Tire Economy Competition*** to continue throughout the year 1906.

Every owner or driver of a motor car is eligible to enter this contest.

The prizes will be awarded according to the tire expense per running mile. Contestants may enter at any time during the year, but must complete 2,500 miles before the close of the competition.

We will forward particulars of this competition and instructions for the care of tires on request.

PENNSYLVANIA RUBBER CO., Jeannette, Pa.

Digitized by Google

Four to One

"Firestone"

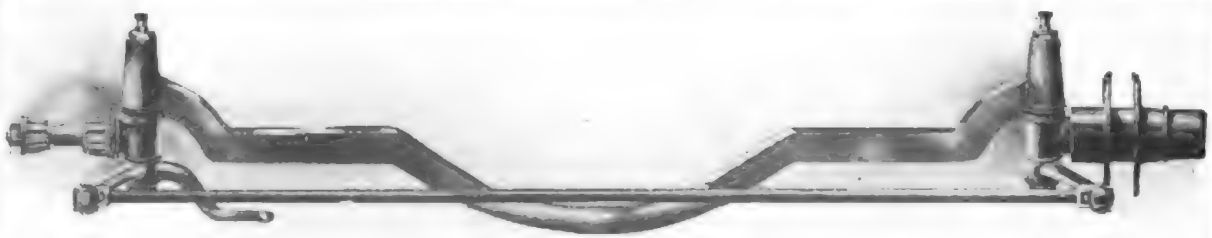
Side Wire Tires

have a record that demonstrates. Four out of every five commercial automobiles are fitted with these tires. Isn't this a demonstration of their superior merit? Isn't this evidence of the durability and abiding satisfaction found only in "The Firestone."

THEN WHY NOT "FIRESTONE?"

FIRESTONE TIRE & RUBBER CO.....Akron, Ohio

NEW YORK CHICAGO BOSTON ST. LOUIS PHILADELPHIA DETROIT



Timken-Lemoine Front Axle (Roller Bearing)

TIMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they do what others *almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

Timken Roller Bearing Axle Co.

General Office and Works, Canton, Ohio

Digitized by Google

Northern

To be exhibited at the Madison Square Garden, N. Y., January 13 to 20, and at Chicago

Better than ever. Motor has been enlarged, affording 20 h. p., and with a wheel base increased to 106 inches and longer and heavier full elliptic springs it will fully sustain its reputation of being "the quietest and easiest running car in the world."

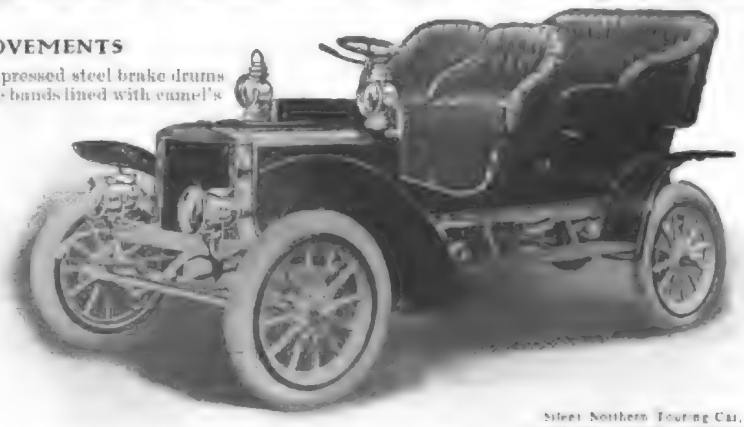
OTHER NOTABLE IMPROVEMENTS

Brake pedal fitted with ratchet and pawl, pressed steel brake drums on rear wheels with external contracting brake bands lined with ennel's hair belting three inches wide, affording an exceptionally large and efficient braking surface; bodies ironed for tops; improved catches on side entrance doors.

Write for Catalogue No. 14 and full information about

1906 MODELS

7 h. p. Sturdy Northern Runabout with lamp equipment	$ 650
20 h. p. two-cylinder car, with gas and oil lamp equipment	1800
20 h. p. Limousine, with gas and oil lamp equipment	2800
Model K, 30 h. p. four-cylinder car, with gas and oil lamp equipment	3000



Silent Northern Touring Car, double side entrance, 4-inch tires, gas and oil lamp equipment

NORTHERN MANUFACTURING CO., Detroit, U. S. A.

Member Association of Licensed Automobile Manufacturers

Chicago Agents: KELLEY-HUNTER CO., 1449 Michigan Avenue

The Engine Starts from the Seat by Forward Pressure on a Foot Lever. No Crank Necessary

The 1906 Duquesne

SPECIFICATIONS

16-21 H. P. 4-cylinder 4-cycle vertical motor, air-cooled.
VALVES—Intake and exhaust mechanically operated, interchangeable. Primary exhaust automatic.
IGNITION—Jump spark. Dry batteries.
CARBURETER—Float feed, spray type, automatic, very efficient.
TRANSMISSION—Planetary, all spur gears, running in oil.
SUSPENSION—Three point flexible.
DRIVE SYSTEM—Direct drive by bevel gears and Duquesne triangular system.
SPEED—8–40 miles per hour.
STARTS from the seat with forward pressure on foot pedal.
BODY—Double side entrance, seats five comfortably.
COLOR—Optional.
WEIGHT—1,750 pounds.

BRAKES—In addition to two powerful expanding brakes on rear wheels that suffice to hold the car anywhere, the rear wheel brake drum, on either side, is fitted with internal cut ratchet teeth, that will positively hold the car on any hill, however steep. This is especially desirable in case of accident or should the motor stop for any cause, as it absolutely prevents car from running backwards.
CONTROL—Spark and throttle lever are arranged on top of steering wheel, but independent of the latter. The gear operating lever is arranged immediately below the wheel; the backward movement of this lever gives the slow speed forward, the forward movement the high speed. The reverse and brakes are operated by foot pedals.
INTERCHANGEABILITY—Every part that enters into the mechanism of the Duquesne is standard and interchangeable. This is a great convenience, especially regarding repairs, and we are in position to forward repair parts the day order is received—a little big thing.

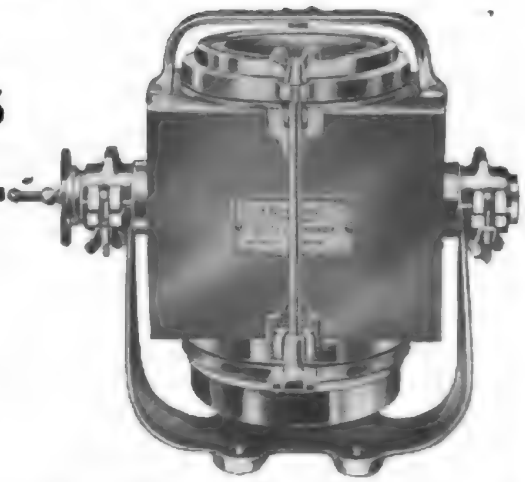
PRICE, $2,000 with full equipment. Two ace ylene lamps, generator, oil side lamps, horn and tail lamp

DUQUESNE CONSTRUCTION COMPANY

JAMESTOWN, N. Y.

Digitized by Google

Make your own gas



The Neverout
TRADE MARK
Patent Invertible

Safety Gas Producer

is the only safe method for lighting motor-cars and boats.

Makes gas only as needed—at a cost of less than ½ cent per hour. No gas confined under pressure, no danger of explosion. Instantly lighted and extinguished.

No trouble, no dirt, no odor

A truly great invention that is as wonderful in its way as is

Neverout Mirror Lens Searchlight

the most powerful of all light projectors. Money back if not satisfactory. *Write for free booklet.*

Largest Searchlight Factory in the World

ROSE MANUFACTURING CO., 912 Arch Street, Philadelphia

To our friends in particular and "the Trade" in general:

We Wish All a Bright, Happy, and a Successful New Year.

May It Prove a Year of Progress and of Satisfactory Results to All.

The Fisk Rubber Company . . . Chicopee Falls, Mass.

(Makers of the Fisk Mechanically Fastened Tires)

Digitized by Google

The Automobile WASHSTAND-TURNTABLE

It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

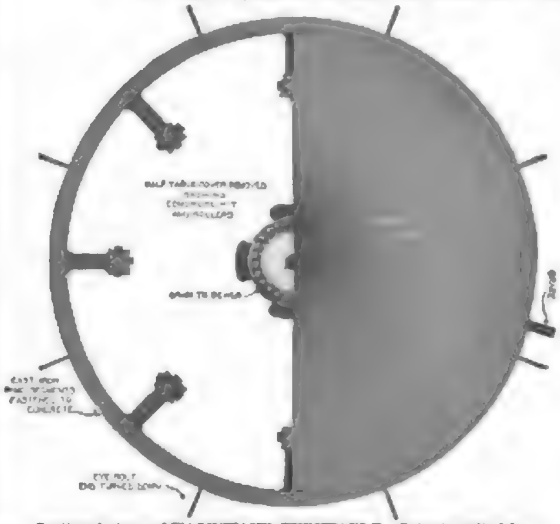
The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown.

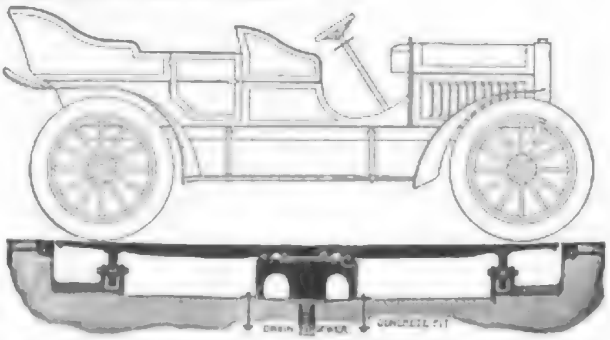
It moves easily, is practically indestructible and is absolutely fire-proof.

It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.





Sectional views of WASHSTAND-TURNTABLE. Patent applied for.

LINK-BELT Machinery Co.

CHICAGO

MICHELIN

Go Faster—Last Longer

Why? MORE PURE RUBBER
EXCLUSIVE FABRIC
SUPERIOR VULCANIZATION
UNEQUALED WORKMANSHIP

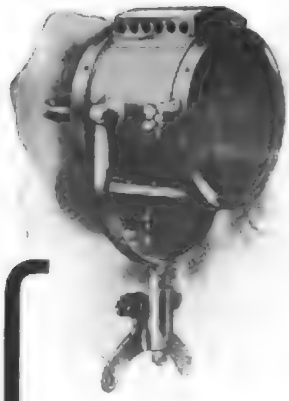
KNOWN THE WORLD OVER
THAT
10,000 MILE
TIRE

MICHELIN TIRE AMERICAN AGENCY, Inc.

Telephones: 760-761 Madison Sq. 6 WEST 29TH STREET, NEW YORK E. D. WINANS, Gen'l Mgr.

Branches in all large cities

Digitized by Google



WHY IS IT

that, three times out of four, when an owner **names** the lamps on the car he advertises for sale, the name is

RUSHMORE?

It's because RUSHMORE Lamps Help to Sell the Car!

The Rushmore has a short focus lens mirror, ground in our own factory, and identical in everything but size with those prescribed by Uncle Sam for his battleships.

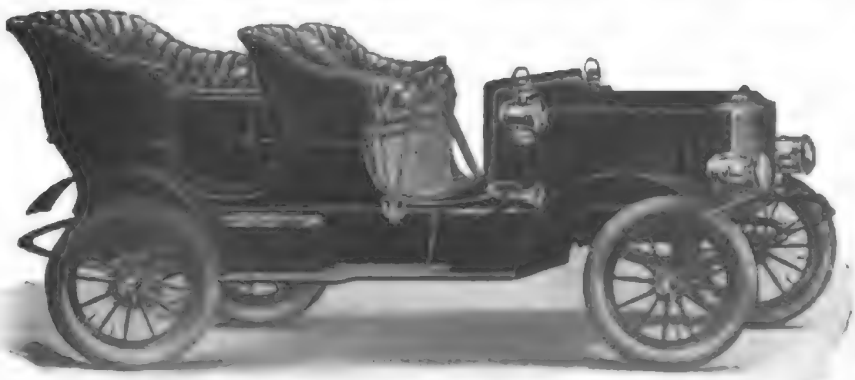
No other lamp compares with it in brilliancy and carrying power. Specify it on your new car.

1906 Models Ready for Delivery

THE LAMBERT

The Famous Friction Drive Car

It will pay you to investigate the Lambert for two reasons:
1st. Simplicity of Construction 2d. Cost of maintenance



NO COMPLICATED PARTS

We are booking orders on the following models:

Model 8. 34 H. P. Heavy Touring Car	$3,000
Model 7. 34 H. P. Touring Car	$2,000
Model 6. 18 H. P. Touring Car	$1,500
Model 5. 16 H. P. Touring Car	$1,200
Model 4. 16 H. P. Light Touring Car	$1,050
Model A. 16 H. P. Runabout	$900

Model 7. 34 H. P. Price, $2,000

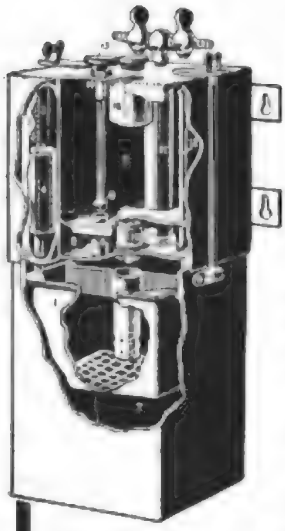
A Gearless Transmission

This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau.
Write for descriptive matter on the above models.

THE BUCKEYE MANUFACTURING CO., Anderson, Indiana

Members American Motor Car Manufacturers' Association, Chicago

Digitized by Google



HERE IT IS

That "Trouble-Proof" Rushmore Generator

We haven't room to tell you about all its unique points of merit, but you can't afford to miss these three:

FIRST: The shaking carbide basket 1, hung by opposite corners and jarred constantly while the car is moving by the weight 4, hung on spring 3. This insures the instant separation of the lime dust from the carbide, and prevents the local overheating, caking of lime, and production of tarry compounds, with which you are probably familiar in other generators.

SECOND: The regulating chamber 8, separated from the water tank 5 by a false bottom, through which the water passes by the shut-off valve 9 and tube 6. To reach the carbide, the water must overflow the short central standpipe 10, and when the gas reaches normal pressure it forces part of the water back through tube 6 to the tank, uncovering the top of standpipe 10. No water can thereafter reach the carbide save through a reduction in the gas pressure, and the action is perfectly automatic, requiring no hand regulation.

THIRD: The safety vent pipe 12, ordinarily not needed, but useful in case of any accidental accumulation of gas when valve 9 is closed.

Every one of these features is essential to a perfectly automatic portable generator. Every one of them is broadly covered by Rushmore patents and cannot be imitated.

Our catalog tells other good points. Write for it.

RUSHMORE DYNAMO WORKS, :: Plainfield, N. J.

On the Ormond-Daytona Beach, Florida, January 22d to 27th, 1906

The Annual Aristocrat of Race Meets Where Speed Kings are Crowned

Plan a brief vacation .... Escape cold weather for a few days by a trip to balmy Florida .... You will see nature's finest automobile speedway .... Why not take your car with you? .... For all particulars as to Railroad, Steamship, Hotel Accommodations, Programs of Meet, etc.,

Address ... W. J. MORGAN, Gen'l Manager, 116 Nassau Street, New York

Representing the Florida East Coast Automobile Association

Digitized by Google

Insurance against freezing troubles

The best way to protect yourself against the danger of the water freezing in the circulating system of your car, and the trouble and inconvenience which it brings on, is to use

No-Mor Auto-Freeze

One charge of this solution does the work for all winter and you don't need to be afraid of zero weather or even 10 degrees below.

No-Mor Auto-Freeze not only saves you the money that it costs to heat your barn, but prevents the bursting of water pipes and saves you the dollars it would take to make the necessary repairs.

It is cheaper to buy **No-Mor Auto-Freeze** than to take any risk. Your mind will be entirely at ease and you won't need to give another thought to your circulating system.

No-Mor Auto-Freeze is already dissolved, won't clog the circulating system and contains nothing to corrode the metal or injure the rubber.

75 cents a gallon, at dealers, or f. o. b. Cleveland, Ohio. Sold only in 5 and 10-gallon cans

Chemist's Report

THE GENERAL LABORATORY CO.
Chemists
185 Gardner St. Cleveland, Ohio

"We have examined and tested No-Mor Auto-Freeze and find that it will not corrode brass, aluminum, copper, galvanized iron or solder, and that it will remain clear at 10 degrees below zero Fahrenheit. Another good feature of the product of this formula is that it will not crystallize out, hence no danger of clogging the circulating system."

Good thing for dealers

No-Mor Auto-Freeze is right in your line, and is an easy seller. Write for terms and full particulars.

OWEN CHEMICAL CO. 45 Vincent Street Cleveland, Ohio

SIXTH NATIONAL

Automobile Show

AT

Madison Square Garden

NEW YORK

JANUARY 13th to 20th, 1906

JAMES C. YOUNG, Manager

SPECIAL NOTICE. The trade admitted free up to 1 o'clock each day upon presentation of business card and registering name and address at the *Bureau of Information*

Digitized by Google

This AUTO TIRE is both DURABLE and LIVELY

When you buy an *ordinary* Auto Tire, you have to decide a difficult question.

Is it best to get a hard, inflexible tire, which will rack your bones and soon put your car out of business, but which will *last a season or more*

Or—

To get a soft, resilient, easy riding tire, which will go to pieces in a short time because it won't stand the wear and tear of the road?

Momentous question.

And either way you answer it—you lose.

Because if you decide on the *hard* tire, it means breakdowns on the road, and consequent liberal use of a farmer's team. It means constant repairs to your engine, a car always in the shop. Your aching joints are thrown in for good measure.

And if you select the *soft* tire, it means punctures, tire explosions and tire troubles generally. And you have to buy new tires every little while.

It's Money—Money—Money, either way.

You'll envy Rockefeller before you get through.

Now you can *dodge* this momentous question if you will.

Because the Goodyear Detachable Auto Tire has all the GOOD points of both the *hard* and the *soft* tire with the bad features of neither.

It's easy for anyone to understand WHY this is true. Read carefully, and see for yourself.

First, look at the section of the Goodyear Tire in the center column. Notice the crescent shaped portion in solid black where the wear of the road comes. That's dense, firm rubber, as tough as rawhide—practically no wear out to it. It's what the *hard* tire is made from.

Now right underneath this is the remainder of the outer tube (shown in grey) which is made from pure para rubber, as resilient and springy as it is possible for rubber to be. It's the same as the seldom-used *soft* tire.

These two different kinds of rubber—the dense, tough composition, to take the wear, and the soft, elastic rubber, to make you ride easy—are made into one solid piece by a special process. You can't skin the two kinds of rubber apart with a knife. Try it if you doubt.

The dense rubber and the soft rubber together make a tire that's almost as durable as a *solid* tire, a tire difficult to puncture yet one which is as *resilient* as a man could reasonably ask.

Our "Good News Book" tells more about the good points of this trouble-saving tire. You ought to get it now, for the Goodyear Detachable Auto Tire with Universal Rim will be "the only tire" next season.

THE GOODYEAR TIRE & RUBBER COMPANY, Wallace St., Akron, Ohio

Branches in the following cities: Boston, 6 Merrimac St.; New York, Cor. 58th St. and Broadway; Chicago, 130 Lake St.; Cincinnati, 262 E. Fifth St.; St. Louis, 712-714 Morgan St.; Philadelphia, 1321 Spring St.; San Francisco, Geo. P. Moore & Co., 506 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 262 Jefferson Ave.

BAILEY TREAD furnished on Goodyear Tires (all sizes) when ordered

DOLSON AUTOMOBILES

THE NEW 1906 MODELS

MODEL F. 45-50 Horse Power, 4 Cylinders, 5"x5"
110-inch Wheel-base, Aluminum Body, $2,500

MODEL E. 28-32 Horse Power, 4 Cylinders, 4¼"x4¾"
108-inch Wheel-base, Steel Body, $1,800

MODEL D. 20-24 Horse Power, 2 Cylinders,
Opposed Under the Hood, $1,500

MODEL C. 20-24 Horse Power, 2 Cylinders,
Opposed Under the Body, $1,250

COMPLETE ADVANCE INFORMATION CONCERNING ABOVE MODELS IS READY

DOLSON AUTOMOBILE CO.

LORETT and PEARL STREETS CHARLOTTE, MICHIGAN

Digitized by Google

ADAMS-FARWELL

THE "REVOLVING-MOTOR" CAR

Our system is no longer an experiment, as our cars are now being operated every day by satisfied customers. In proof of this let us send you copies of letters received from owners of 1904 and 1905 models.

Three and five Cylinders—20-25 and 40-45 Horsepower
Six Models $2,000 to $4,000—Highest Grade Only

No Water: No Radiator: No Fly-wheel: No Muffler: No Fan: Automatically Governed

CHICAGO SALESROOM: 1536 MICHIGAN AVE.

THE ADAMS COMPANY, Dubuque, Iowa, U.S.A.

Hill Precision Oilers

The first requisite in a mechanical oiler is ***efficiency.*** To be ***efficient,*** it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is ***economy.***

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

THE OSCAR LEAR AUTOMOBILE CO.
Automobiles
Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

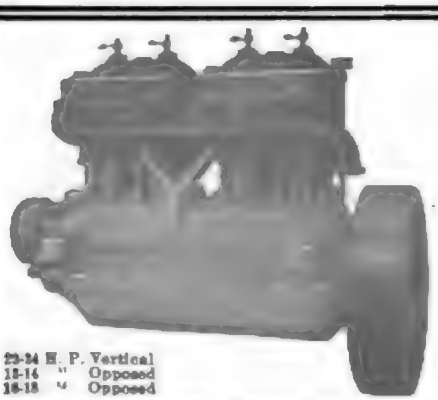
Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car. Yours truly,

THE OSCAR LEAR AUTOMOBILE CO.

THE STEEL BALL COMPANY
840 Austin Avenue
CHICAGO ... ... U. S. A.

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

R. E. DIETZ COMPANY, 37 Laight St., New York
ESTABLISHED 1840



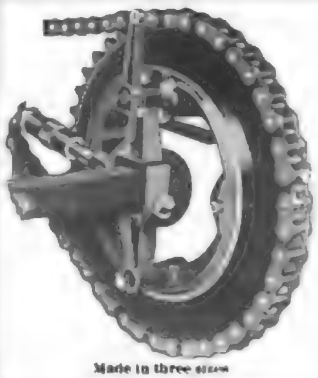
29-34 H. P. Vertical
18-14 " Opposed
16-18 " Opposed

"DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable. Our prices will interest you. Performance and deliveries guaranteed. Correspondence solicited.

BEAVER MFG. CO., Milwaukee, Wis.

Digitized by Google



Made in three sizes

GARFORD PARTS

A few Garford parts in a high grade car enhance its value. Liberal use of them maintain it. Just now we have none for sale. High grade car makers snapped up all we can make this season just as soon as they were offered—a plain tribute to the excellency of their design and material. Our productive capacity for 1907 will be so enlarged as to avoid the disappointment of fruitless inquiry.

MOTOR WAGON PARTS

We can, however, promptly execute orders for steering gears, brakes, sprockets, motor hangers and other parts for motor wagons. They are suitable for all classes of commercial power vehicles, from the lightest to the heaviest. They are not "freak" components of a wonder working vehicle. They enjoy the rare distinction of having been thoroughly tested for some years past in the most varied and severe kinds of commercial service. Circulars 2, 3, 5, 10 and 11 give information concerning them.

THE GARFORD COMPANY, Elyria, O.

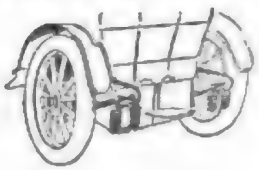
Sales Manager: HAYDEN EAMES, Cleveland, O.

Pinion and Section Type also supplied.

BUMPING THE BUMPS

in a Motor Car is bad enough in the summer time when the ground is soft, but when winter rolls around and the roads freeze up, you simply MUST do something to offset the jolts and jars of driving.

SUPPLEMENTARY SPIRAL SPRINGS



Absolutely do Absorb all Vibration

If Comfort Interests You, You Will Find Them

A NECESSITY

They act alike under heavy and light loads. They save your engine, your tires, your car and your back.

When you write for Catalogue, mention name and model of your car. Address

SUPPLEMENTARY SPIRAL SPRING CO.,

4527 Delmar Avenue :: :: ST. LOUIS, MO.

Swinehart Tires

One proof that our tire is **superior to any**, is the fact that dealers are pushing our tires although we do not allow them as great a commission on sales as they get on other tires; neither do they ever expect any revenue for repairs after our tires are applied.

We have hundreds of testimonials from users of **Swinehart tires** on sixty different types of cars, claiming that **Swinehart tires** do not injure their machinery. This proves either that our tires are superior to other solid tires or that there are plenty of substantially built cars now on the market.

The Swinehart Clincher Tire & Rubber Co.

AKRON, OHIO

New York City, 1773 Broadway Chicago, 1308 Michigan Boulevard

HAVE YOU SEEN THE NEW

KOKOMO

MECHANICALLY-ATTACHED

AUTOMOBILE TIRE?

It is just what you have been looking for.

Quickly attached and detached.
Creeping and Rim Cutting entirely avoided.
Made of the very best material and workmanship throughout.
Write us for full particulars.

KOKOMO RUBBER CO.,

KOKOMO, IND.

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Self-Starting from the Seat
(With Make and Break Ignition)

"Matheson"

"America's Finest Motor Car"
1906 Models { 40-45 H. P.
60-65 H. P.

Our New Factory now building in.... WILKES-BARRÉ, PA.
will be one of the largest and most modern automobile plants in existence. We will move into this new plant about January 1, 1906. Address until then.....

MATHESON MOTOR CAR CO.
.....Holyoke, Mass.

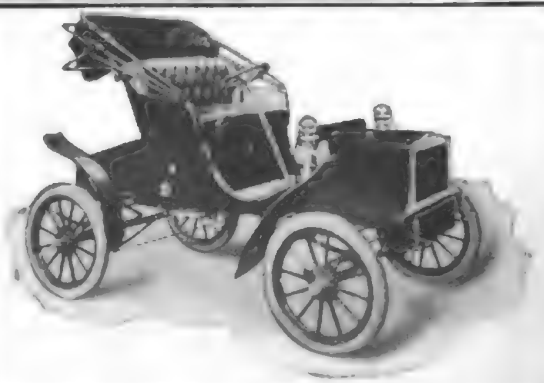
SOLARS

FOR AUTOS CYCLES OR LAUNCHES

MR. DEALER: Why not handle a line that you know will satisfy your customers instead of taking chances on "just as good" lamps. YOUR profit is as MUCH or MORE on Solars, and your customers "stick." Write us to-day for prices on our 1906 line.

BADGER BRASS MFG. CO.
New York Office, 11 Warren St. KENOSHA, WIS.

GALE



1906 Model "D" $650 Minus Top $600

WHEEL-POST CONTROL, ROLLER BEARINGS to rear axle
ANY TIRES, 28x3, Pneumatic, Solid or any other kind
Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

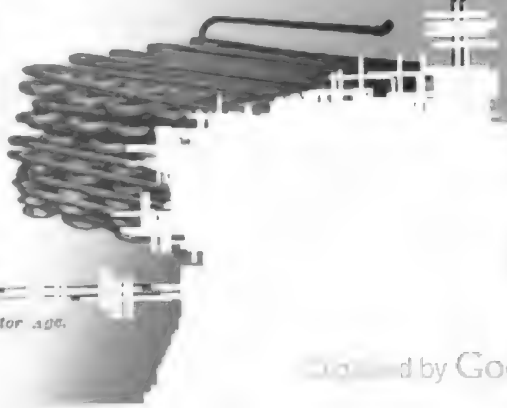
WESTERN TOOL WORKS GALESBURG ILLINOIS

STEAM CAR SPECIALTIES

STRICTLY UP-TO-DATE

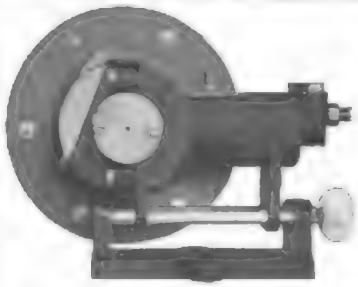
The only Flash Boiler with a reserve capacity. Condensers that condense. Burners that burn: either kerosene or gasoline. Single Acting Steam Engines, designed especially for superheated steam.

Everything for building an up-to-date steam car, or for remodling your old one. Flash Boilers; any size.



E. C. Walker Co.
1913-1923 LOGAN ST., LOUISVILLE, KY.

Digitized by Google



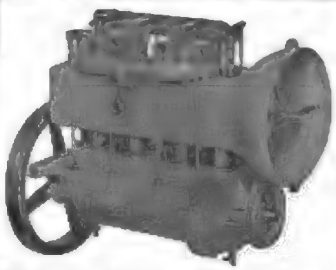
The P. T. C. Power Tire Pump

It is designed to inflate pneumatic tires by POWER driven by friction from fly wheel. Always in place. Started by turning a screw. Write for circular.

The Pacific Tucking & Manufacturing Co.

471-3 18th Street BROOKLYN N. Y.

WE HAVE IT



Absolutely Tested by all kinds of Horseless Work

Positively Proved by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on motor end, blowing a CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS

TREBERT

THE DETAILS

15 H. P., developed at 1500 revolutions.
Bore and stroke, 3½x4 inches.
Length of Motor over all, 29 inches.
Crank Shaft diameter, 1¾ inches.
Total bearing surface on Crank Shaft, 10¾ inches.
Bearing on Connecting Rods, 2x1¾ inches.
Bearing on Wrist Pin, 1⅜x1¾ inches.
Connecting Rods of drop forgings with phosphor bronze Crank Shaft
Base and Crank Case of Aluminum.
Width of Motor from end of arm to end of arm, 19¾ inches.
Center of Crank Shaft to bottom of Motor, 4¾ inches.
Center of Crank Shaft to top of Motor, 10 inches.
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.
Total Weight, 225 lbs.
Lubrication by Splash Feed and constant feed automatic lubricator.

TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES
BUILDERS OF TRANSMISSIONS AND CLUTCHES :: LIGHT POWERED CARS REBUILT

REFERENCE: JOHN WANAMAKER, NEW YORK

180 WEST MAIN STREET, ROCHESTER, N. Y.

BERKSHIRE AUTOMOBILES

High Class Touring Cars

Made and Tested in the Berkshire Hills

1906 Models Ready December 15th.

16 H. P. $2,000. 25 H. P. $2,500. 40 H. P. $4,500.

Douglas Andrews Company,

SELLING AGENTS.

1623 BROADWAY. NEW YORK.

BROWN-LIPE GEARS

IRREVERSIBLE STEERING
BEVEL AND CHAIN DRIVE DIFFERENTIAL
MANY SIZES AND MODELS
SLIDING GEAR TRANSMISSION

K. Franklin Peterson, 166 Lake St., Chicago.
Thos. J. Wetzel, 11 Warren St., New York. } Direct Factory Salesmen.

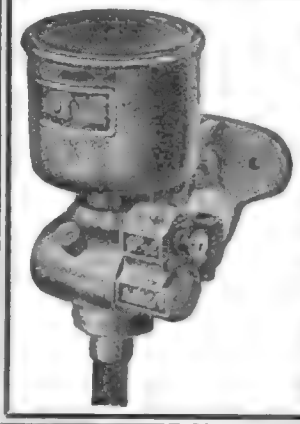
Chas. E. Miller, 97 Reade St., New York.
318-320 No. Broad St., Philadelphia.
202-4 Columbus Ave., Boston.
406 Erie St., Cleveland, O. } Sales Agent Carrying Stock.

Post & Lester Co., Hartford, Conn., Eastern Sales Agts.

BROWN-LIPE GEAR CO.

200 South Geddes Street SYRACUSE, N. Y.

Digitized by Google



Start the New Year Right With the **AUTO-METER**

"It Tells How Fast" **ON YOUR DASHBOARD** "It Tells How Far"

If you want to know with absolute certainty just what your car is doing in the way of speed at any time, the Auto-Meter's Speed Dial will tell you.
If you want to know with absolute certainty just how far your car has traveled on a trip, the Auto-Meter's Trip Dial will inform you.
If you want to know with absolute certainty just how far your car has traveled after the season is over, the Auto-Meter's Season Dial will show you.
Automobiling is not enjoyed to the fullest, until there's an Auto-Meter on the car.

Write for Catalogue and "Indisputable Evidence"

Warner Instrument Company 55 Roosevelt Avenue BELOIT, WIS.

NEW YORK OFFICE: 1691 Broadway BOSTON OFFICE: 163 Federal Street CHICAGO OFFICE: 804 Steinway Hall
NORTHERN CALIFORNIA: G. P. Moore & Co., San Francisco SOUTHERN CALIFORNIA: Heineman & Pearson, Los Angeles

THE COIL THAT DOES THE TRICK

In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29 :37 2-5. This is considered a most wonderful performance. Besides

SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

HERE IS DR. PARKER'S LETTER:

Mr. C. F. Splitdorf. June 24th, 1905.
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly, C. B. Parker.
167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

C. F. SPLITDORF 17-27 Vandewater St. NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

GEECEE

STORAGE BATTERY

UNEQUALED FOR

Automobile and Motor Boat Ignition and Illumination

HIGHER IN CAPACITY AND VOLTAGE THAN ANY WET BATTERY NOW ON THE MARKET.

Acid (Electrotype) in suspended form, made dry by a secret process, can't spill or leak. Perfectly safe in any position. No danger of acid-eaten clothes, connections, etc.

As easily recharged as a wet battery. A layman can do it as well as an electrician when he uses the "Geecee" charging outfit.

Full directions with each Battery and outfit.

By buying the "Geecee" you buy miles, and you will know just how far you can go.

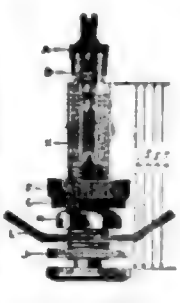
The same battery that operates your ignition outfit will also furnish the required current to operate your limousine light or a search light on your motor boat.

Royal Battery Co., Mfrs. 143 CHAMBERS ST. NEW YORK

NATIONAL SALES CORPORATION
FACTORY SALES MANAGERS
256 Broadway : : : NEW YORK

SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895



SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires; our No. 777 Valve being the standard for 2 1-2 inch and 3 inch tires, and our No. 725 Motor Valve being the standard for all tires larger than 3 inch.

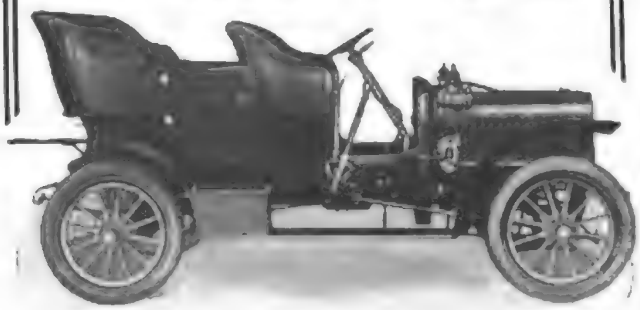
SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

Manufactured by

A. SCHRADER'S SON, Inc., 28-30-32 Rose Street, New York

Digitized by Google

MOLINE



18-20 H.P. Model "C" $1,750

The smartest little four cylinder car in the market at the price.

Other styles for 1906 are—

Model "A" 30-35 H. P. $2500.00

Same general type as Model "C" only larger and more luxurious.

Model "C" 16 H. P. $1000.00

A most decidedly attractive double cylinder car for four or five passengers.

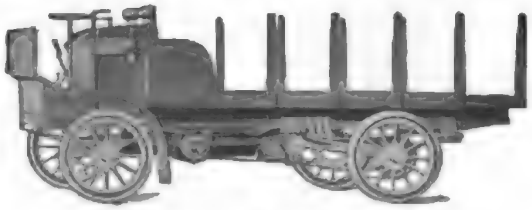
Full particulars of all three styles may be had by writing to us.

Moline Automobile Company, East Moline, Ill.

NEW YORK.
Automobile Exchange and Storage Co.,
133-139 West 38th St.

BOSTON.
C. H. Saunders,
"Motor Mart."

KNOX



NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

POWERFUL RELIABLE ECONOMICAL

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

KNOX AUTOMOBILE CO., Springfield, Mass.

Largest and Oldest Manufacturers of Gasoline Commercial Cars.

We Exhibit in New York at Madison Square Garden Only, Jan. 13-20, 1906

MEMBERS A. L. A. M.

Automobile Lamp Manufacturers

WHO USE

Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.
Badger Brass Mfg. Co. (Solar), Kenosha, Wis.
Commercial Acetylene Co., New York City, N. Y.
E. E. Dietz Co., New York City, N. Y.
A. H. Funke, New York City, N. Y.
Gray & Davis, Amesbury, Mass.
Manhattan Lamp Works, New York City, N. Y.
Motor Car Equipment Co., New York City, N. Y.
New York Coach & Auto Lamp Co., New York City, N. Y.
Rose Mfg. Co., Philadelphia, Pa.
Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

It is easy to avoid trouble—*simply insist upon licensed burners.*

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

Von Schwarz Burners

On Label: Von Schwarz and patent number.
On Steatite: J. v. S.
On Pillar: J. v. S.
&
M. K. & Co.
Pat. Aug. 31, '97.

BRENNAN MOTORS SATISFY

NOTHING CAN DO MORE

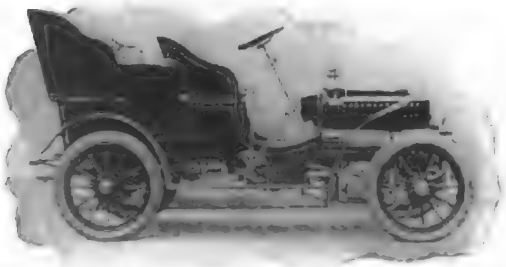
We make a special motor and transmission gear for

OLDSMOBILES
NORTHERN Runabouts
OLDS TOURING CARS
CADILLAC
FORD
THOMAS Models 17 and 18
GENERAL
YALE
AUTOCAR

WHITE STEAM CAR GLIDE RAMBLER CLEVELAND
POPE-HARTFORD SANDUSKY RUNABOUT
ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR
and all standard makes of cars

BRENNAN MFG. CO. SYRACUSE N. Y.

Digitized by Google



Wolverine D

Double-opposed Motor
Under the Hood

Bevel Gear Drive

3-speed Sliding Gear
Transmission

18 Horsepower (Actual)

Price, $1,250.00

Wolverine Automobile and Commercial Vehicle Company

Dept. "C." Dundee, Mich.

PREST-O-LITE GAS TANK

No Waste. No Odor. No Attention. Tips Never Clog. Nothing to Freeze.

SIMPLE ENOUGH
When you want gas, turn it on. When you don't, —turn it off.

NEVER AFFECTED BY EXTREME COLD

In cold weather moisture collects in the tubes leading from the Generator to the Lamps, causing them frequently to freeze up; either entirely preventing gas from passing to the lamps or bursts the pipes.

The gas from the Prest-O-Lite Gas Tank contains nothing to freeze. It simply cannot freeze.

ALWAYS READY FOR SERVICE

No time lost No inconvenience Write for booklet

PREST-O-LITE CO., - Indianapolis, Ind.

Exclusive Licensees under patents of the Commercial Acetylene Co.
AGENTS IN MOST CITIES. :: :: WE WANT THEM IN ALL

PITTSFIELD

The Pittsfield Line consists of Coils, Commutators, Switches and Spark Plugs.

WE CLAIM them to be, BAR NONE, the best in every particular in the world.

WE KNOW that they are perfect in economy, reliability, rapidity and insulation.

THE PERFECT INSULATION on the Pittsfield Coil, absolutely makes puncturing or rupturing an impossibility.

OUR 1906 COMMUTATOR or Timer is guaranteed a positive contact under any and all conditions.

OUR 1906 JEWEL SPARK PLUG prevents fouling or short circuiting. Sparking points and chamber between core and shell are thoroughly cleaned at each explosion.

WRITE FOR BOOKLET explaining every point. It covers the subject of IGNITION completely. Address

PITTSFIELD SPARK PLUG CO.
Pittsfield, Mass.

Excelsior Supply Co., Randolph Street, Chicago, Western Distributors.

PERFECTION

8,000 MILES

Perfect Satisfaction, Never Breaking

HOTEL TOURAINE
BOSTON

July 3d, 1905.

BRAMPTON BROS., Ltd.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

1906 CARS

Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars.

Catalogue mailed on request.

CHARLES E. MILLER

Manufacturer, Jobber, Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES
Broadway and 38th St., New York. Philadelphia—315-320 N. Broad St.
Boston, Mass.—202-204 Columbus Av. Cleveland, O.—408 Erie St.

Digitized by Google

GAS-AU-LEC

"THE SIMPLE CAR"

Elegant in Finish
Luxurious in Appointments
Built by Skilled Workmen from the Best Materials Obtainable

THE SIMPLEST GASOLENE CAR IN THE WORLD

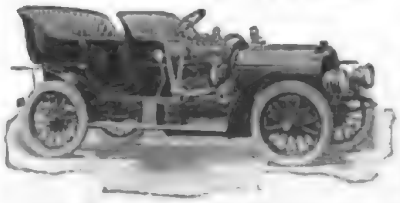
—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction"

40-45 Horse Power, $5,000

CORWIN MANUFACTURING COMPANY
PEABODY, MASS., U. S. A.

What Royal Tourist Owners are Writin'



"More pleased with Royal than any car I have ever owned. Have owned about 25, both foreign and American."

"Mine has run about 4000 miles this season, and has had absolutely no repairs."

"Since June 22d I have toured about 6000 miles and during this time I have never once stopped on the road to make a single repair or adjustment."

"The Royal Tourist which I purchased of you has run about 6000 miles, over hard country roads and sharp hills, and total cost of repairs will not exceed $8.00."

"I have run this car about 6000 miles and have given it some hard usage. The expense for repairs has been $3.25."

"Am delighted with my Royal. Have run it nearly 2000 miles and have had no repairs."

"We have been over 7500 miles at this date, without a repair or replacement of any kind or description, except to tires."

Ask any of our Agents to show you reproductions of letters from which these remarks were taken.

ROYAL

THE ROYAL MOTOR CAR CO.
CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile & Supply Co., Ltm., Toronto, Ont.; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburg, Pa.; Amos-Pierce & Co., Syracuse, N. Y.; Thompson Schaffel Co., Rochester, N. Y.; Gus Boyer, San Francisco, Cal

Member A. L. A. M.

Send for Catalogue.

Hotel Marlborough

Broadway, 36th and 37th Sts.
Herald Square ::: New York

MOST CENTRALLY LOCATED HOTEL ON BROADWAY

Under New Management Since January, 1905

Completely Renovated and Transformed in Every Department

The Largest and Most Attractive Lobby and Rotunda in the City

Two Beautiful New Dining Rooms

Superior Table d' Hote Dinner every day from 6 to 9 p. m.

The Famous German RathsKeller

Broadway's Chief Attraction for Special Food Dishes

Popular Music *Better than ever before*

400 Rooms **European Plan** 200 Baths

HEADQUARTERS FOR AUTOMOBILISTS

Make Reservation for Rooms Early

RATES FOR ROOMS: $1.50 and upward; $2.00 and upward with bath. Parlor bedroom and bath, $3.00, $4.00 and $5.00 per day. Parlor, two bedrooms and bath, $5.00, $6.00 and $8.00 per day. $1.00 extra where two persons occupy a single room

Write for Booklet

Sweeney-Tierney Hotel Company

E. M. TIERNEY, Manager

Carpenter Nickel=Chrome Steels.

Crankshafts and Axles forged only in Slab Form, slotted and finished to size; then oil treated in our Projectile Department. Shafts and Axles thus made of our No. 1 **AUTONICKEL—CHROME-STEEL** average:

Tensile Strength,	**130,000 lbs.**
Elastic Limit,	**114,000 lbs.**
Elongation	**19 per cent**
Reduction of Area	**60 per cent**

SPECIAL ALLOYED STEELS
FOR
GEARS, SPRINGS, VALVES, FORGINGS, ETC.

THE CARPENTER STEEL COMPANY

Works: Reading, Pa New York Office: 1 Broadway.

Digitized by Google

The Wray Compound Air Pump

with pressure register, price complete, $6.00

Inflate your tires to the following pressure:

4 1-2 in. Tires		3 1-2 in. Tires	
Ft	Re	Ft.	Re
60 lb.	75 lb.	70 lb.	80 lb.

4 in. Tires		3 in. Tires	
Ft.	Re	Ft.	Re
60 lb.	75 lb.	60 lb.	70 lb.

Wray Pump & Register Co.

191-193 Mill St.,

ROCHESTER, N. Y.

Send for complete catalog. Patent Allowed

Veeder

ODOMETERS

For $10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for $15.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know How Far You Go."

THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.

Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

LATEST TYPE **WILLARD** LATEST TYPE

STORAGE BATTERIES

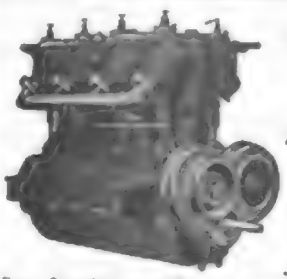
Are operating Electric Automobiles Regularly

75 MILES AND OVER ON ONE CHARGE

Write for Particulars

The Willard Storage Battery Company

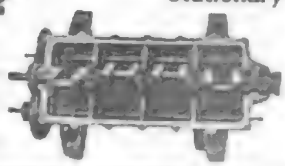
Cleveland, Ohio



"Aster" Motors

From 1 to 60 H. P.

Automobile Motors
Marine Motors
Electric Groups
Stationary



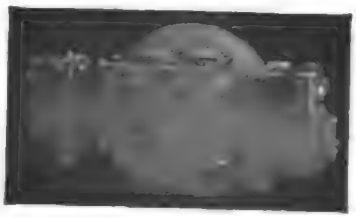
Gas, Gasoline and Kerosene

ASTER CO.,

Office, 1591 Broadway, New York

25 H. P. Vertical 16 H. P. Opposed

High-Class Automobile Motors



The A. Streit Machine Co.

CINCINNATI OHIO

STOP THAT NOISE!

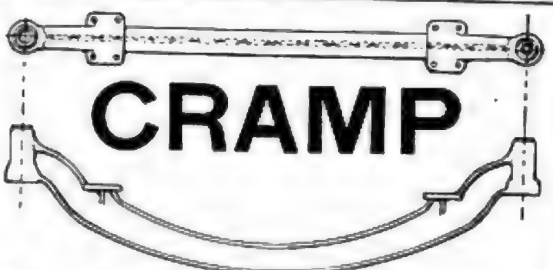
NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

LET US HEAR FROM YOU.

THE NEW PROCESS RAW HIDE CO.

SYRACUSE, NEW YORK



CRAMP

The Winton Front Axle Casting of Parsons' Manganese Bronze

Fifty thousand pounds of Ingots furnished for the 1906 Cars.

The William Cramp & Sons & Ship Engine Building Company

PHILADELPHIA, PENNA.

Digitized by Google

There's Danger in the Dark

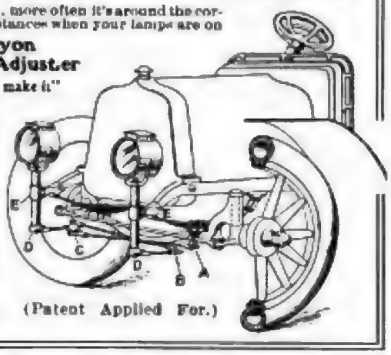
Sometimes it's straightaway, more often it's around the corners. Laid bare in both instances when your lamps are on

The Imperial-Lyon Automatic Lamp Adjuster

"It lights a turn before you make it"

Fits any make of car, carries any make of lamp. Makes the lights move with wheels. Gives you a light around the corner before your car makes the turn. A safeguard against collisions and smashups, in fact a necessity, if you ride after dark. Get a circular and get acquainted with it. Send us your name and address and we'll send circular and price.

Imperial Brass Mfg. Co.
249 S. Jefferson St. Chicago



(Patent Applied For.)

The Standard American Cooler

THE WHITLOCK COOLER

Was used on the LOCOMOBILE RACER THAT FINISHED THIRD IN THE VANDERBILT CUP RACE. It was never touched during the race. IT DID ITS FULL duty. It held its water and kept the engine cool.

The Only {Cellular {Coolers Made {in} America

that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race. Quality and efficiency only figure in an event of this importance. We make coolers of the HIGHEST EFFICIENCY. The leading makers of automobiles have recognized this fact by adopting

THE WHITLOCK COOLERS

continuously for the seasons of 1903, 1904, 1905 and 1906.

THE WHITLOCK COIL PIPE CO.
Hartford, Conn.

MUD

FORGET IT AND USE WEED'S TIRE GRIPS.

POSITIVLY STOPS SLIPPING OR SKIDDING.
THEY MAKE BAD ROADS GOOD.
WEED CHAIN TIRE GRIP CO.
28 MOORE ST.
NEW YORK CITY.
SEND FOR BOOKLET "C"

STOLP COOLERS

Patents Pending

GOOD COOLERS

Stolp Mfg. Co.
CHICAGO

Lexington Hotel

22d and Michigan Blvd

Absolutely Fireproof

European Plan—$1.50 and up per day.

The nearest and most convenient hotel to the Automobile District and Exhibition Halls for the February Show—special rates by the week

INTER-STATE HOTEL CO.
Owner & Prop. E. K. Criley, Pres., T. M. Criley, V.-Pres., L. H. Flery, Sec.-Treas.

MUD GUARDS

HOODS AND FORGED IRONS

"The Best Kind"

HAYES MFG. CO.
750 Bellevue Ave. Detroit, Mich.

Baldwin Automobile Chains and Sprockets

Best Material

Accurate Construction

BALDWIN CHAINS AND SPROCKETS

SEND FOR CATALOGUE

BALDWIN CHAIN & MFG. CO. WORCESTER MASS.
K. Franklin Peterson, Western Sales Agent
105 Lake Street, Chicago, Ill.

Digitized by Google

ARTILLERY WHEELS

Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

BUCKEYE WHEEL CO., Galion, Ohio

ALUMINUM CASTINGS

GUARANTEED MAXIMUM STRENGTH

Grade
B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder. VERY TOUGH AND HARD.

A Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc. VERY HARD AND DURABLE, but cannot cut the journal.

In ordering Phosphor Bronze Castings n to adaptation of the qualities above given.

GUARANTEED MINIMUM WEIGHT

Light Mfg. & Foundry Co., POTTSTOWN, PENNSYLVANIA

A Swell Joint

The acme of specialization—the limit of excellence—is represented in our

Universal Joint and Brake Drum

Your closest investigation of our claims will PROVE that NOTHING BUT THE BEST in EVERY RESPECT is used. Write us TO-DAY.

SPICER UNIVERSAL JOINT MFG. CO.
PLAINFIELD, N. J.

Direct factory representatives: K. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

Standard Roller Bearing Co.

STEEL BALLS
BALL BEARINGS
Roller Bearings
Automobile Axles

Send for Catalogue. PHILADELPHIA

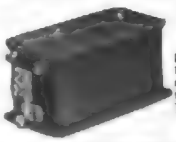
C. O. T. ACID CURE SOLUTION AND VULCANIZING FLUID.

WHY worry over a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber sine of cut. Not loosened by heat. Plain rubber patches both round and oblong.

CHAS. O. TINGLEY & COMPANY
Rahway, N. J.

Beckley-Ralston Co., Chicago, Ill., West. Dis.
Phoenix Auto Supply Co., St. Louis, Mo., A. L. Dyke, Mgr., Southwestern Agents.

JUMP SPARK COILS



For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

Send for Catalogue K.

THE KNOBLOCK-BEIDEMAN MFG. CO., South Bend, Ind.

Anti-Freezing Calcium Chloride

In cooling water of Automobiles **Won't Rust** or effect the metal. Freezing point 54° below zero. Non-precipitating.

Write For Our Circular

James H. Rhodes & Company,
107 E. Kinzie St., Chicago.

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy** and **satisfaction** in having such work done outside of the city.

W. S. FRAZIER & CO., Aurora, Ill.
Chicago Office, 371 Wabash Ave.

Electric Signs

Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.

U. S. ELECTRIC SIGN CO., Muncie, Ind

GRAY & DAVIS HIGH GRADE LAMPS.

AMESBURY, MASS.

DUST-DEFLECTORS

MAKE MOTORING AS DUSTLESS AS SAILING

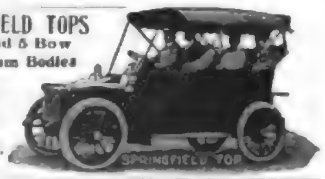
$20 Brings relief from dust for the rest of your life. BOOKLET TO INQUIRERS.

W. H. BROWN, Lennox Bldg., Cleveland, O.

SPRINGFIELD TOPS

3, 4, and 5 Bow
Aluminum Bodies

Springfield Metal Body Co
72 Birnie Ave. Brightwood
SPRINGFIELD, MASS.



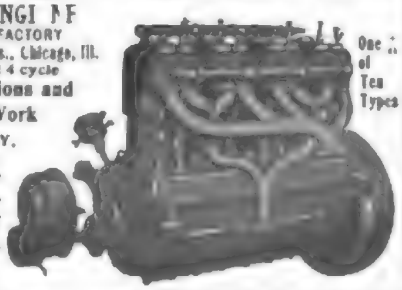
"MOTOR AGE" and "MOTOR," $3.00 Per Year

Send Subscriptions to 309 Michigan Ave., Chicago.

MOTORS — All Commercial Sizes

CONTINENTAL ENGINE
NEW OFFICE AND FACTORY
Cor. Kingsbury & Huron Sts., Chicago, Ill.
1½-40 h. p. 2 and 4 cycle
Designs, Specifications and Special Contract Work
OUR SPECIALTY.

4-Cyl. air cooled, weight 90 lbs., total. 3-Cyl. air cooled, 75 lbs. total.



One of Ten Types

Telephone North 1601

VERTICAL AND HORIZONTAL

Chicago and Cincinnati

are connected by a railroad route having finely appointed trains, day and night—Sleepers and Parlors.

Monon—C. H. & D.

Ride this way once and you'll ride again—we think.

CHAS. H. ROCKWELL, Traffic Manager. **CHICAGO** FRANK J. REED, Gen. Pass. Agt.

Digitized by Google

"Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, Pa.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:

Philadelphia, 220 North Broad St.
New York, 69th St. and 8th Ave.
San Francisco, 635 Howard St.
Pasadena, 31 South Raymond Ave.
Minneapolis, 31 Ave. So. & 5th St.
St. Paul, 372 Minnesota St.
Pittsburgh, 5846 Centre Ave.
Rochester, 160 South Ave.
Portland, Ore., 340 5th St., N.
Cleveland, 404 Huron St.
Detroit, 265 Jefferson Ave.
Chicago, 204 East Lake St.
Los Angeles, 334 S. Main St.
Buffalo, 649 Main St.
Boston, 30 Stanhope St.
Savannah, 320 Bull St.
St. Louis, 3944 Olive St.
Denver, 1449 Clarkson St.

SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada.

Strength, Safety, Simplicity

in the

Springfield JACK and TIRE TOOL

For any car weighing from 500 to 6000 pounds. Price $2.25 delivered

For removing any Clincher Tire from 2½ to 4½ inches. Price $3 delivered

Sold by all dealers.

THE SHAWVER COMPANY

Springfield, Ohio

WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY
SYRACUSE, N. Y

ALUMINUM CASTINGS BRONZE

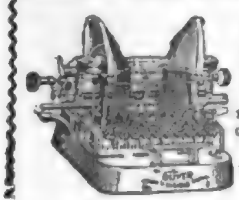
We Want Agents for the

OLIVER Typewriter

—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently.

Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver Typewriter Co.,

100-200 WABASH AVE., CHICAGO, ILL., U. S. A.

Foreign Office 75 Queen Victoria St., London, England.

FOR AUTOMOBILE

USED BY THE LARGEST MANUFACTURERS

HARRIS OIL

Sold at all Principal Garages

A. W. HARRIS OIL CO.

330 South Water St., Providence, R. I.
and
66 Fifth Ave., Chicago

LUBRICATION

"SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.

CHAS. A. THOMPSON CO.

39 Cortlandt Street New York City

MAT'S BODY POLISH

Prevents the Finish from Cracking or Staining

Used by the Chicago Garages. Send for sample.

$2 PER GAL. MAT. WEIS

1412 Michigan Avenue, CHICAGO

Keep Your Feet Warm

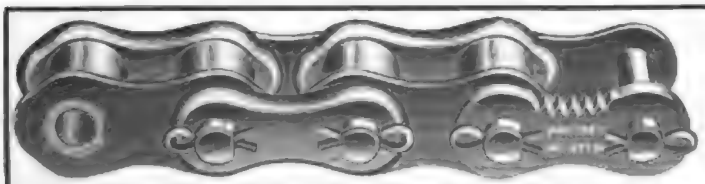
and you will be warm all over.

The H. & H. Auto Heater

Does the Trick Right.

No fuel. No smell. Just pure air. Get our Catalogue. Address

Chicago Auto Heater Co., 285 N. State St., Chicago



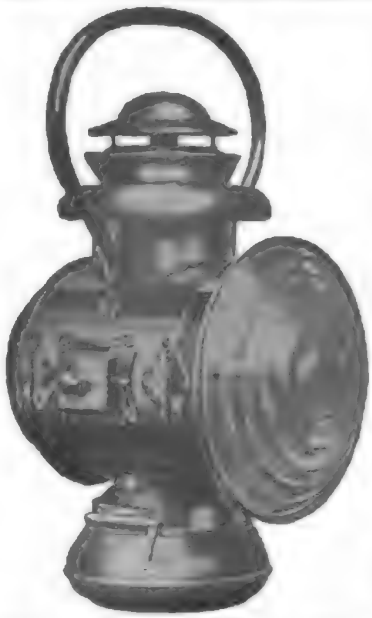
"Whitney" Chains

PATENTED

USED BY THE LEADERS

THE WHITNEY MFG. CO., Hartford, Conn.

Digitized by Google



RELIABLE GUIDES
are the HAM LAMPS
The TOURIST for 1906

is the greatest light-producing oil lamp ever made.

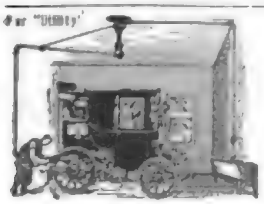
SEE THE LENS?

If your car is equipped with TOURIST Lamps, you don't stop when the acetylene lamps fail you, as the way will still be lighted with reliable light. Light that won't blow out or jar out.

You can save yourself from lamp troubles by insisting that your car is equipped with HAM Lamps.

Write for booklet showing complete line.

C. T. HAM MFG. CO. Rochester New York

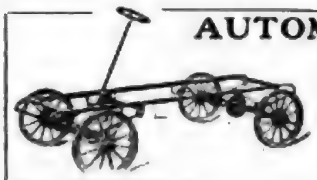


Overhead Washing Machines

A Time, Labor and Money Saver.
For Public and Private Garages. No garage is complete without them.
Send for descriptive pamphlet and prices.

A NECESSITY TO EVERY AUTOMOBILE OWNER

THE H. NICHOLSBURG MFG. CO., 68 Dey Street, NEW YORK



AUTOMOBILE RUNNING GEARS
WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts

H. F. BORBEIN & CO. 2109 N. 9th Street ST. LOUIS, MO

AVALON STORM APRONS

afford complete protection against storms and bad weather for both cars and occupants. Made with openings for one to five persons. Fasten closely about neck. Openings can be closed if not used. Heavy rubber cloth,—plaid back. We also handle

WEED CHAIN TIRE GRIPS

Prevent skidding and assist in traction on muddy roads.

Write for *Special Deal* prices on above.

The Ball-Fintze Co.
Dept. C. Newark, Ohio

TOOLS for producing duplicate Metal Parts

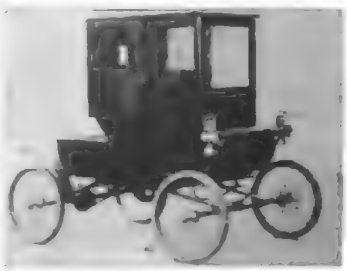
I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class and every effort will be made to give satisfactory service.

L. T. GAUSS, 222 Mill St., Rochester, N. Y.

DIES for blanking, forming and drawing
DRILL JIGS
MILLING FIXTURES
VISE JAWS
SPECIAL CUTTERS, ETC.

Voltage—4, 6 and 8
Capacity—
20 Amp. —Hours
Prices—$6, $9, $12
Other styles—
$3.75 to $32.00.
Established 1899
Catalogues on Request.

AMERICAN BATTERY COMPANY
165 South Clinton St. CHICAGO, ILL.



A high class Coupe Top. Fits Olds Standard Runabout, can be attached in thirty minutes and detached a ten. Front glass hinged and can be raised at will. Price, $60.00. Write for full description

The Fellwock Autotop Co., Evansville, Ind.

POCKET
Battery Ammeter
0 to 30 Amperes
Indicates in any position and in either direction of current.
In testing single cells, the cord is not necessary.
Price $3.50
ELDREDGE ELECTRIC MANUFACTURING CO.
Springfield, Mass.

SPROCKETS
Chains and Differentials
CULLMAN WHEEL CO.
1021 DUNNING STREET, CHICAGO, ILL.

DIXON'S GRAPHITE
Motor Lubricants
Interesting booklet and samples FREE.
Joseph Dixon Crucible Co.
Jersey City, N. J.

MOTOR CAR SPECIALTIES
and SUNDRIES
WE SELL EVERYTHING
WRITE FOR CATALOG
THE AUTOMOBILE EQUIPMENT CO.
252 Jefferson Ave. Detroit, Mich

The IGNITION PROBLEM is SOLVED
in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT. We have done the experimenting.
NO BATTERIES. NO COIL. NO COMMUTATOR.
Everything for Electrical Ignition.
LEON RUBAY, Sole U. S. Agents, 140 W. 23th St., N.Y.

Special Design Finest Quality Built-to-Order
BODIES AND TOPS
C. P. KIMBALL & CO.
315 Michigan Ave. Chicago

Digitized by Google

"E. & J." LAMPS
GAS AND OIL SIDE-LIGHTS
Copy of our 1906 Catalogue mailed on request
The EDMUNDS & JONES MFG. CO.
DETROIT, MICH

WITHERBEE

Storage Batteries
are used and endorsed by forty-two of the leading automobile manufacturers.
Specify the WITHERBEE and avoid ignition trouble. Satisfaction guaranteed or purchase money refunded.
Sold by the leading jobbers. Write for descriptive pamphlet.
WITHERBEE IGNITER CO.
841 West 43d St. NEW YORK

Every operator of an Automobile, Motor Cycle, or Launch should own one of our
AMERICAN POCKET AMMETERS
For testing dry cells. The only RELIABLE pocket ammeter on the market. Lasts a lifetime.
Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.
AMERICAN COIL COMPANY
Foxboro, Mass.
Pacific Coast Branch, 306 McAllister St., San Francisco.

Automobile Tire Protectors
For the Prevention of
Skidding, Punctures and Wear
LEATHER TIRE GOODS CO.
Newton Upper Falls, Mass.

E. F. LESTER, Mf'r.
ALUMINUM
ARROW BRAND
SOLDER AND FLUX
FAYETTEVILLE, N. Y.

Eclipse Tops
Look Better
Wear Better
Made Better
Are Better
than any others. It's an old story with us. We have been making good tops practically all our business lives.
Write for catalogue.
Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

Gasoline —SELF— MEASURING Outfits
For the Automobilist and the Garage.
Guaranteed non-evaporative, airtight, no-leakage.
From tank into automobile reservoir.
Tank underground—Pump in building.
Write for Catalog "M"—it will surely pay you.
WESTERN OIL PUMP CO.
2400 Kosciusko St., ST. LOUIS, MO.

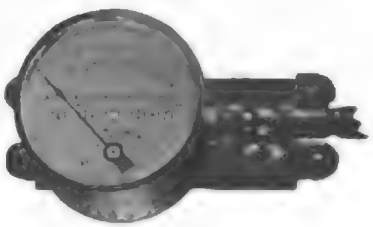
ORIGINAL MANUFACTURERS OF
AUTO TOP MATERIALS
We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.
Write for samples and price list.
L. J. MUTTY CO., Boston, Mass.

CANDY CARBIDE
For FRENCH AUTO LAMPS (Impregnation dans le vide)
Packed only in 10 lb. cans. Price $2 each
Discount to dealers in case lots of 12 cans
SOLE MANUFACTURERS
ACETYLENE GAS ILLUMINATING CO.
105 WALKER STREET NEW YORK

Every Automobilist's Automobile
should be equipped with a Jones Speedometer for the reason that it is recognized as the only *practical* speed indicating device.

The accuracy of the Jones Speedometer is attained by the mechanically perfect application of an absolutely unchangeable law. Its standard of perfection will never be equaled by devices based on theories. In the development of our Speedometer, we experimented with a large variety of devices, employing the principles of hydraulics, pneumatics, magnetism, electricity, etc., but after exhaustive tests discharged them, because found lacking on one essential or another.

Theoretical accuracy does not necessarily mean *practical* accuracy—nor does *initial* accuracy mean *permanent* accuracy.



JONES SPEEDOMETER
122 West 32d Street New York

SURETY
Messrs. Clemens & Merz were sure of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1,094 miles. You can always be just as sure of any of the 47 sizes of improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your new car and save bother.
THE R. E. HARDY CO.
225 West Broadway, New York City
Garden Show Space, No. 78. Armory Show Space, No. 61. Coliseum Show Space, No. 178.

PACKARD ENAMELED IGNITION CABLES
NEVER DISAPPOINT
They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?
PROOF AGAINST HEAT, GREASE, OILS and WATER
THE PACKARD ELECTRIC COMPANY
WARREN, OHIO, U. S. A.

THE London Tops
Style
Durability
Quality

LONDON AUTO SUPPLY CO., 1229 Michigan Ave., Chicago

ALUMINUM, PHOSPHOR BRONZE, BEARING BRONZE AND BRASS CASTINGS FOR AUTOMOBILES
HOFELLER BRASS FOUNDRY CO.
BUFFALO, N. Y.

READ MOTOR AGE ... $2.00 per Year

Digitized by Google

CRACKED CYLINDERS, GEARS, SHAFTS, Etc.

We repair by our Brazing System, making parts repaired stronger and tougher than they were originally. **Brazing is stronger, quicker, cheaper than patching.** In patching every hole drilled for bolts or rivets weakens the casting and the more a patched casting is used the looser it becomes. The metals used in brazing are stronger and tougher than cast iron, making the brazed part stronger than when new.

Cold weather does all kinds of fatal things to cylinders and other automobile parts. Write us for particulars, prices, etc.

NATIONAL BRAZING CO., 83 W. Jackson Blvd., Chicago

WELCH

1906 LIMOUSINE CAR 1906

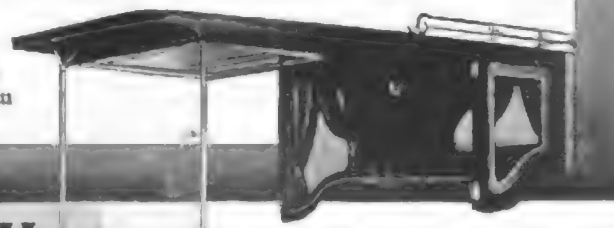
FOR

FALL AND WINTER USE

PRACTICALLY IMMEDIATE DELIVERIES

¶ Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS. ¶ Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. ¶ 4 to 50 miles on direct drive.

So simple a child can operate.



WELCH-Motor-Car-Co.
Detroit and Pontiac Mich.

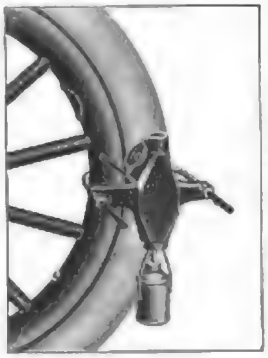
UNIVERSAL JOINTS

Designed for Automobiles and Motor Boats

Taken apart or put together with the hands, no tools needed. Working bearings hardened steel and interchangeable, ⅞ in. diameter by 1¼ in. long and so constructed it is impossible for dirt to get in or the grease to get out. Our circular shows you how this is done. One filling of Grease Cups lasts an ordinary season.

BLOOD BROS. AUTOMOBILE & MACHINE CO.

Manufacturers Kalamazoo, Mich.



ANYBODY CAN USE IT

Blowouts, sandboils, glass cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

"Stitch-in-Time" Vulcanizer Co. Topeka, Kan., U. S. A.

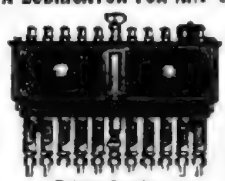
"OILEJAMMER"

THE OIL GUN WITH THE EXTENSION NOZZLE
PREVENTS BREAKAGE
KEEPS YOUR HANDS AND CLOTHING CLEAN

THE BEST OIL GUN EVER MADE AT ANY PRICE
BEST MATERIALS. WHEN EXTENDED 30 INCHES CLOSED 11 INCHES. SENT PREPAID FOR $1.50

THE MOTOR CAR SUPPLY CO.
1427 MICHIGAN AVENUE, - CHICAGO
"EVERYTHING FOR YOU AND YOUR AUTO"

A LUBRICATOR FOR ANY CAR, ANY SYSTEM



An automatic pressure feed oiler instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

Made with any number of feeds. Write for circular.

Patent Pending. Manufactured by

J. T. PEDERSEN, 642-644 First Ave., N. Y.

Gilbert Auto Fabric Supplies

LOOK FOR THE NAME

FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

The Gilbert Mfg. Co.
New Haven, Conn.

SPIRAL TUBING RADIATORS
HOODS ANY STYLE OR SIZE
LONG MFG. CO.
381-3-5 Wabash Ave. CHICAGO

Of course if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis — Levi Matthews
THE LEWIS & MATTHEWS CO.
Foreign and Domestic Cars — Automobile Selling Agts. 65, 68, 70 Stanhope St. — Garage and Supplies — Repairs
Cable Address: "Autohead" Used Cars
Telephone Tremont 711 Boston, Mass., June 23, 1906

Herz & Company, 187 Elm St., New York, N. Y.:

Gentlemen—Herewith kindly find check to cover the amount due you. Also please enter our order for twelve (12) of your Bougie Mercedes 1905 plugs in the metric 19 m. m., size similar to our last order. We wish to express ourselves as very highly pleased with the Bougie Mercedes plugs and feel sure you will be glad to know that through all our automobile experience we have never found a plug so thoroughly reliable.

Very truly yours, THE LEWIS & MATTHEWS CO., Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth.
"BOUGIE MERCEDES" best on earth.
It's DOUBLE STONE, will never crack.
Absolutely self-cleaning.

Six months' guarantee. Price $2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York
Write for Vademecum of Ignition.

Simplicity Automobile Extension Cape Tops
Simplicity Spray Hoods
CHARLES P. McCLELLAN, Fall River, Mass.

1906 YANKEE GRADE METER. PRICE $7.50.
This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

YANKEE MICA SPARK PLUG. PRICE $1.50.
Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.
H. J. WILLIS CO., 7 Park Place, New York

Auto Top Bronzes
Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.
C. W. COOPS CO.
3 Appleton St., Boston, Mass.

BESTOGO STORAGE BATTERY
Essentially different from other Lead Batteries
SEND FOR CATALOG
Miller Signal Co., 262 JACKSON BOULEVARD, CHICAGO

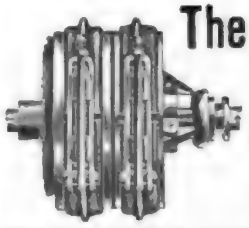
VALVELESS-PUMPS
WITHOUT STUFFING BOXES OR SPRINGS
All Your Oiling Troubles Eliminated
Any Number of Feeds
Write for Catalogue
Madison-Kipp Lubricator Co., Madison, Wis.

ATWOOD
"STAY-LIT"
LAMPS ARE THE BEST
ATWOOD MFG. CO., Makers
Send for catalogue Amesbury, Mass.

"TRIUMPH" GASOLENE TANK GAGE
Applicable to tanks with or without pressure to show quantity of gasolene.
SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP
The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.
See that your New Car has a "Triumph" Gage
Boston Auto Gage Company
FACTORY: 8 Waltham Street, Boston, Mass. OFFICE: 613 Old South Bldg.

Rajah SPARK PLUGS
The Most Reliable IGNITION ABSOLUTELY SURE
Price, Postpaid $2.00
RAJAH AUTO SUPPLY CO., 140 Washington Street New York

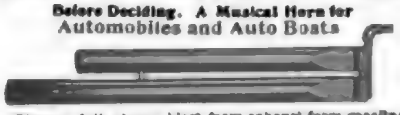
SHELBY SEAMLESS-STEEL-TUBING
BEST MADE FOR AUTOMOBILE CONSTRUCTION
SEND SPECIFICATIONS
WE QUOTE PRICES
SHELBY STEEL TUBE CO.
PITTSBURG, PA.
BRANCH OFFICES—NEW YORK—CHICAGO.



The Ball Improved Transmission
and REVERSE GEAR
— FOR —
Automobiles and Motor Boats
MADE ONLY OF SPUR GEARS
Patented April 9, 1901; Nov. 3, 1903; Jan. 12, 1904; Feb. 23, 1904.

NEW YORK GEAR WORKS, 56 Greenpoint Ave., Brooklyn, N. Y.
Western Agents: J. H. Neustadt Co., St. Louis, Mo.

BY ALL MEANS HEAR
THE GABRIEL HORN
Before Deciding. A Musical Horn for Automobiles and Auto Boats

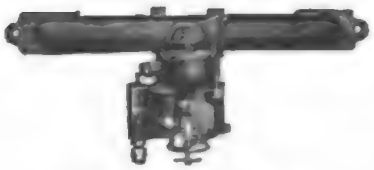


Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.
Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.
Comes in three styles—two, three or four horns.
Write today for Catalogue, giving prices and full information.
GABRIEL HORN AND MANUFACTURING CO.
970 Hamilton St., Dept. B, CLEVELAND
New York Branch, 148 West 38th St.

OLD Tires Made **NEW**
New Tires Made **Puncture-Proof**
NEWMASTIC FILLING
For Clincher and Single Tubes
Just as Resilient as a Pneumatic
Just as Safe as a Solid Tire
How Do We Do It?
Write Us and Learn
NEWMASTIC TIRE CO.
1263 Michigan Ave., CHICAGO, ILL. Tel. South 1301
ST. LOUIS, MO.

Digitized by Google

HOLLEY
CARBURETORS



Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

Watch Our List

If you don't find one for your make of car, write us.

MODEL E STANDARD

Prices, top or side outlet, are as follows:

	With Pipe Thread
1-2 in. and 3-4 in. gasoline outlet	$11.00
1 in. gasoline outlet	12.00
1 1-4 in. gasoline outlet	13.00
1 1-2 in. gasoline outlet	14.00

Increase the power of your car by equipping it with one of the following special HOLLEY CARBURETORS.

SPECIAL SIZE FOR

Oldsmobile Runabout	$12.00
" Tonneau Car	11.50
" Touring Runabout	11.50
Ford 10 H.P., Model C	11.50
Winton, Model B and C	18.00
Cadillac, single cylinder	13.50
Northern, Runabout	12.50
" 2-cylinder Touring Car	14.00
Franklin 4-cylinder Runabout, 10 and 12 H.P.	12.00
Two-cylinder Buick	14.00
8 H. P. Single-cylinder Crest	13.00
Two-cylinder Queen	13.00

Holley Carburetors are used exclusively by the Olds Motor Works, Winton Motor Carriage Co., Ford Motor Co., Mitchell Motor Car Co., and other successful manufacturers.

Write for Circular E Full information sent on request

HOLLEY BROS. CO.

672 Beaubien St., DETROIT, MICH.

Pardee-Ullmann Co.

Agents for

PACKARD

AND

FRANKLIN

1218-1220 Michigan Avenue

Phone 557 South CHICAGO, ILL.

The McDUFFEE Automobile Co.

Distributors for

Stoddard-Dayton and Royal Tourist

Phone South 1297

1449 Michigan Ave. CHICAGO

Cadillac Automobile Co. of Illinois

1312 Michigan Avenue, Chicago

CADILLAC

Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

C. A. COEY & CO.

Illinois and Eastern Iowa Agents for the

THOMAS FLYER

Always on hand—Bargains in New and Used Cars of all descriptions :: :: :: 'PHONE CALUMET 1043

1323-1325 Michigan Avenue, Chicago

SENSATIONAL PRICES

We are closing out all short lines, together with all second hand and shop worn models to make room for 1906 agency goods now coming in—MOLINE 8-cyl. 30 h. p. side entrance, new, $1350; Moline, 2-cyl. 12 h. p. side entrance, new, $660; Hoffman 10 h.p. tonneau, new $400; Murray runabout, $200; Oldsmobile, $250; Buckboard, $200; Gale, 8 h. p. new, $350; Winton, $700; and many others at sacrifice prices. We are Chicago agents for "The Moline," "Prayer-Miller" "Gale" and exclusive United States importers for the Benz, Manheim, Germany. Call and see us or send for Catalogs.

MEAD MOTOR CO., 1243-1245 Wabash Ave., CHICAGO

TIRE REPAIRS

All makes and types given equal attention

Correspondence solicited

RUBBER GOODS REPAIR CO.

89 16th St., Chicago. Phone South 1280

LAMBERT Friction-Drive Automobiles...

12-16-32 h. p., $1000 to $2000

Write for Catalogue

ADLAND MOTOR CO.

1303 Michigan Ave., Chicago

EVERYTHING IN

AUTO SUPPLIES

FOR OWNER AND DEALER

SEND FOR CATALOGUE NO. 49

EXCELSIOR SUPPLY CO

ESTABLISHED 1876 CHICAGO

OLDSMOBILE

Agents and Distributors for Illinois and Wisconsin

THE GITHENS BROS. CO.

1328 Michigan Ave., Chicago

Telephone, South 1658

GOOD AGENTS WANTED

PREMIER

FOR ILLINOIS AND IOWA

RALPH TEMPLE

309 Michigan Avenue CHICAGO

The Importers' Company

AGENTS FOR

Richard-Brazier Cars

1400 Michigan Avenue CHICAGO

LOBEE ROTARY PUMP

400 in use demonstrating its efficiency with all types of radiators for circulating water or oil in gasoline motors. Lobee Pump Co., 280 Terrace, Buffalo, N. Y. C. E. Miller, Agt., 97 Reade St., New York, A. L. Dyke Auto Supply Co., 4708 Olive St., St. Louis, Mo.

Searchmont Cars Rebuilt

Searchmont Repair Parts of every description for sale.

FAIRMOUNT ENGINEERING WORKS

3209 Spring Garden Street, Philadelphia, Pa.

ROBERT VOLT-AMMETER

For General Battery Testing—Guaranteed

Tests both Volts and Amperes.

3-VOLTS 6-VOLTS

30-AMPERES 30-AMPERES

Send for Catalogue.

ROBERT INSTRUMENT CO.

58 Shelby St. Detroit, Mich.

POPE -TOLEDO -HARTFORD -TRIBUNE -WAVERLY

ORLANDO F. WEBER CO.

(INCORPORATED)

Distributors for

CHICAGO and MILWAUKEE

1323-26 Michigan Ave. Phone 1099 South

332-36 Fourth St. Phone 2761 Main

Digitized by Google

BOWSER GASOLENE TANKS

We manufacture Gasolene Storage Outfits—all kinds. Self-measuring Outfits for Garages; smaller, less expensive ones for private automobilists. It will pay you to investigate our

Long Distance Gasolene Storage System

"Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog.

S. F. BOWSER & CO., Inc., Ft Wayne, Ind

N. F. O. LUBRICANT GUN

Has no weak points. Strongest on the market. Has SEAMLESS Spout which will not split open in service, like soldered ones with which inferior oil guns are fitted. Will soon return its cost in oil saved and last a life time. Write us if your dealer cannot supply you.

New York & New Jersey Lubricant Co.
14 Church St., N. Y. 79 9th St., San Francisco

THE SOLVAY PROCESS COMPANY'S "KAL-KRYSTAL" makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses.

CARBONDALE CHEMICAL CO.
739 UNITY BLDG., CHICAGO

Force Feed Lubrication

Constant Sight Feed. No Liquids

McCord & Co., 1402-20 Old Colony Bldg., Chicago
E. J. Day & Co., Pacific Coast Distributors
224-226 Golden Gate Avenue, San Francisco, Cal.

Your $5.00 Back

If after 30 days' trial you don't feel absolutely sure the

SKINNER

COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen.

Compact, light and convenient for carrying.

$5 Express Prepaid

SKINNER & SKINNER, MFRS.
4156 Indiana Ave., Chicago

EVERYTHING FOR

Man, Motor and "Mechanician"

Specialties and Leather and Wool Winter Clothing

A. L. DYKE AUTO SUPPLY CO.

OLIVE AND WALTON STREETS
ST. LOUIS, MO.

ROBT. F. BRITTON, Pres. and Mgr. ROY F. BRITTON, Secy. and Treas.

Complete Lists of Auto Owners, Dealers, Garages and Jobbers

MOTOR DIRECTORIES CO., Inc.,
Successor to
AUTO DIRECTORIES CO.,
108 Fulton St., N. Y. City

COOLERS FENDERS

HOODS TANKS

ALUMINUM

Aluminum Automobile Parts a Specialty

The Pittsburgh Reduction Company
Pittsburgh, Pa.

Perfect vs. Imperfect Ignition

Batteries WILL play out but never when fed by an APPLE AUTOMATIC BATTERY CHARGER. The current delivered is steady and unchanging, insuring fat, hot sparks. See us at N. Y. and Chicago Auto Shows.

The Dayton Electrical Mfg. Company
75 Beaver Bldg. Dayton, Ohio

THE Apple Automatic Battery Charger

DIAMOND WRAPPED TREAD TIRES

DIAMOND RUBBER CO., AKRON, OHIO

All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

National Spring & Wire Company, Albion, Mich.

WE ARE SOLE IMPORTERS OF

NIEUPORT IGNITION OUTFIT

The Best in the World.

Magnetos, Coil, High Tension Distributor, Nieuport Spark Plug, Storage Battery, Ignition Wire

ALBERT CHAMPION CO., 541 Tremont St., Boston, Mass.

HOT SPRINGS, ARK.

Only 20½ Hours from Chicago
VIA THE

WABASH

You can leave Chicago daily at 11:30 A. M., on the

BANNER BLUE LIMITED

the finest train on earth, and connect in Union Station, St. Louis, with the Hot Springs Special on the Iron Mountain, reaching Hot Springs next morning at 8 o'clock.

Write for free Booklet telling all about this popular health and pleasure resort.

Ticket Office, 97 Adams St.
CHICAGO

G. S. CRANE, G. P. & T. A., St. Louis. F. A. PALMER, A. G. P. A. Chicago.

Truffault-Hartford Suspension

Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, $40; cars over 1500 pounds, $60; 4 suspensions.

HARTFORD SUSPENSION CO.

69 Vestry Street, NEW YORK CITY

DIAMOND CHAINS

Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

Diamond Chain & Mfg. Co., Indianapolis.

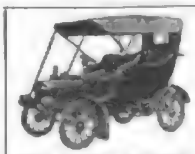
THE U. S. JACK

WITH UNIVERSAL HEAD

LIFTS ANY WEIGHT CAR UP TO 6000 Lbs

A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 5 1-4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

U. S. JACK CO., 352 S. Claremont Av. Chicago



HIGH-GRADE EXTENSION AND VICTORIA TOPS

THE MYERS-DAYTON TOP CO., Dayton, Ohio

AUTO TRIMMINGS

The right kind that puts a high grade appearance to a high grade car. We make 'em. Space No. 119 N. Y. Show.

AUTO BRASS & ALUMINUM CO.
FLINT, MICH.

STEEL CASTINGS

FOR AUTOMOBILES A SPECIALTY

WRITE FOR SAMPLES AND PRICES

MILWAUKEE STEEL FOUNDRY CO
MILWAUKEE, WIS.

Specify ...an... **Auto Cle** on Your 1906 Car

WRITE FOR CATALOG

RAILWAY APPLIANCES CO.
Old Colony Building Chicago

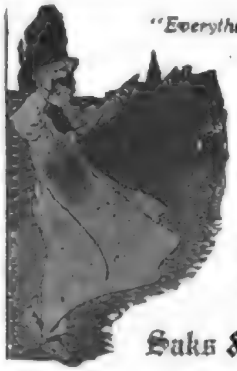
Digitized by Google

There was a time when a regular and reliable ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit any make of motor. State make of your motor when ordering.

HERZ & CO.
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

"Everything for the Autoist but the Auto"



THE NEW BOOK IS READY PLEASE SEND FOR IT

We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

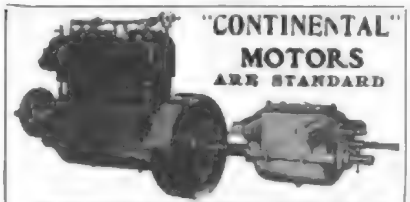
Saks & Company Broadway, 33d to 34th Streets NEW YORK

The "B. & S." Auto Wrench

IS THE WRENCH WITHOUT A RIVAL

DOES YOUR 1906 KIT CONTAIN IT?

The Billings & Spencer Co.
HARTFORD, CONN.



"CONTINENTAL" MOTORS ARE STANDARD

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 4 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car.

BIGGEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE
AVOID INFERIOR IMITATIONS
ASK FOR CATALOGUE

Continental Motor Mfg. Co. 240-244 W. Lake St. CHICAGO

K. F. PETERSON, Direct Factory Representative

FOR $2 PER YEAR

READERS OF

MOTOR AGE

Receive 1560 pages of interesting mechanical descriptions and touring hints

WHERE CAN YOU BEAT THIS?

MISCELLANEOUS.

Advertisements under this head 3 cents per word first insertion; 2 cents per word for each insertion thereafter. Ads set in any style other than regular setting, 24 cents a line first insertion, 16 cents a line for each insertion thereafter.

Special rates for continuous advertising in these columns upon application.

FOR SALE—Pope-Toledo, 30 H. P., 1905, front entrance; Victoria top; new Continental tires; full equipment; fine condition; owner going abroad. $2,000. Dwight Automobile Co., Omaha, Neb.

FOR SALE—Model N Packard; fine condition; with top, headlights, gas tank, extra heavy Fisk tires, one extra tire. Price $3,000. C. F. Steele, Alpena, Mich.

WANTED—A thoroughly competent automobile salesman who has had good record and can show it, to sell Cadillac (full line) and one other well known car. Will pay salary and liberal commission to right man. Large western city. B. A., care MOTOR AGE.

FOR SALE Automobile White Steamer

Touring car, seating 5, model 1904, first-class condition, with cape top, Morse steam pump and big lights, extra. Price $800. E. A. Slack, Brookline, Mass.

FOR SALE—1906 Model F White Steamer, with cape top and acetylene lamps and generator. Color dark blue. New Diamond tires on all wheels. Car has been used for about one month. Guaranteed in first-class condition. Immediate delivery. Address W. M. D., care this paper.

TO TRADE—Model A Cadillac, with tonneau; condition good; will sell or trade for larger car. Address Box 6, Prophetstown, Ill.

WANTED—Your automobile tires and tubes to vulcanize. Retreading our specialty. We also manufacture large vulcanizers. We save you one-third. Charles E. Miller, Anderson, Ind.

FOR SALE CHEAP—16 H. P. Buckmobile Touring Car, motor under hood. Complete with top; five lamps, horn, tools, etc. Carry five passengers; plenty of power; fine condition. Also one Lackawanna slide transmission gear for shaft drive. Also one 15 H. P. Buckmobile with detachable rear seat; fine condition. Utica Motor Car Company, Utica, N. Y.

FOR SALE—Model B Winton, fitted with canopy top, glass front, pair of large searchlights, brass side lights, tail light, extra tires and inner tubes, Weed chains, 1906 Model K Winton commutator and coil. Everything in first-class condition. Has seen very little use. Cost $3,100. Price, quick sale, $1,700. Apply The Reading Automobile Co., Reading, Pa.

FOR SALE—40-horsepower auto. engine and transfer side chain drive with clutch complete, $350. A. M. S., 901 N. Fairfield Ave., Chicago, Ill.

FOR SALE—Oldsmobile runabout in perfect condition; leather top; back seat; extra tire; carbide lamps; Pittsfield timer, paint and all tires good. Price $300. Description by mail. Dr. T. T. Smith, Canton, Ill.

FOR SALE—Fine modern shop, approximately 60 M square feet, equipped with up-to-date machinery, admirably adapted for the manufacture of automobiles and parts. Excellent location in thriving Indiana city of 20,000. Unexcelled shipping facilities. On two trunk lines. Labor first-class and moderate in price. No strikes. Capacity 200 men. Would make favorable terms. Send for full particulars. Box 3, care MOTOR AGE.

FOR SALE—New 1906 Model F, $2,800, White Steamer; standard equipment; used but little. A chance to get the best car made at a reduction. Located in Ohio. Need the money. H. J., care MOTOR AGE.

FOR SALE—Daimler delivery wagon in first-class condition. Price $400. Great bargain. Fairmount Engineering Works, 3207-11 Spring Garden St., Philadelphia, Pa.

FOR SALE—One 1905 Pierce Great Arrow, in A1 running condition; also top regular equipment. Address C. F. K., 1293 Woodward Ave., Detroit, Mich.

COMPETENT MEN as instructors in progressive automobile school; must undergo examination and show fitness for the work. Instructor, care MOTOR AGE.

FOR SALE—Very cheap; Ford four-cylinder, Ford two-cylinder, Winton two-cylinder, Rambler two-cylinder, Improved Rambler H one-cylinder, Orient buckboard, mostly 1905 cars. Prices and descriptions extremely interesting. A card will bring the information. E. S. Youse, Reading, Pa.

Digitized by Google

FOR SALE—Packard Model L; first class condition, recently thoroughly overhauled at factory; extra equipment, 4½ inch Diamond tires on rear wheels; brass plated Veeder dashboard odometer; Hartford suspension on rear springs; complete set of oil cups on spring bolts; Gray & Davis acetylene lamps with Solar generator; B. & J. lockswitch; T. P. C. tire pump; muffler cut-off for attaching Gabriel horn; large dope cup on dashboard feeding driving shaft, steering wheel bearings; also two bearings on commutator shaft; cup has two extra feed pipe connections. Price, $2,300 cash.

Autocar—Tonneau fitted with extra seat; engine recently overhauled and put in first class condition; guaranteed as good as new; tires extra heavy and recently purchased; full lamp equipment. If you want a first class machine at a bargain, write the Michigan Stove Co., 1022 Jefferson Ave., Detroit, Mich.

NEW TIRES, 28x2½, $9; RUBBERINE FILLED, $13.50. 28x3 rubberine filled, $16. 30x3½ or 4 rubberine filled, $22 to $28. Rubberine saves tires, time and worry.
Automobile Palace, 152 W. Jackson Bl., Chicago

FOR SALE—Double chain drive transmission and other automobile parts. W. Roulet, 107 Washington St., Chicago.

WILL TRADE ten or twenty acres of garden land, 10 miles west of Toledo, Ohio, on interurban line, for automobile. H. G. Welsh, 314 North Main, Hutchinson, Kan.

WANTED—Manager and salesman with $1,000 to $2,500 cash in automobile company in eastern Iowa. Address Iowa, care MOTOR AGE.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; brand new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

FOR SALE—Packard late 1903 Model F; recently overhauled at factory. Will equip with brand new tires and sell for $750 cash. First check takes it. H. W. Beach, Montrose, Pa.

FOR SALE

THOMAS TOURING CAR—1904 model; 3-cylinder; seats five persons; perfect condition; thoroughly overhauled by factory recently; this car was driven by the owner eleven hundred miles from Macon, Mo., to Buffalo without an accident and never missed fire once on the trip; new tires this season; I refer to the E. R. Thomas Motor Co., of Buffalo, as to condition of car; my reason for selling is that I have purchased a larger type car; price and full description on application. Address owner, William R. Compton, Macon, Mo.

FOR SALE—8 H. P. Olds engine in runabout car; 2 new Morgan & Wright tires; $200. Box 143, Cayuga, Ind.

FOR SALE—1905 Oldsmobile light tonneau car; 10 horsepower; paint, machinery and tires good as new; cost, with extras, $1,050; a bargain at $850. Address Ed Connine, Wexford, Mich.

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas headlights, cape top, portfolio, extra tool boxes, complete tool equipment, including some specials, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make an offer. Box 71, care MOTOR AGE.

FOR SALE—1½ h. p. motor cycle engine, $20. C. Shook, Waterloo, Iowa.

WANTED—Automobile in exchange for good lots or land; will give a good trade. Box 81, Independence, Iowa.

FOR SALE—Attachable motor bicycle outfits at fall prices. Send for literature. Shaw Mfg. Co., Galesburg, Kan.

HIGH-GRADE Marine and Automobile Engines, 2 and 4 cycle, 2 to 30 h. p. Lowest prices. A. J. Houle Motor Works, S. East St., Holyoke, Mass.

WANTED—Model "B" Cadillac; must be in first class condition; name tires, lamp equipment and accessories and price. R. T. Davis, Jr., 26 S. Water St., Cleveland, O.

FOR SALE—Searchmont auto body with detachable tonneau; finely upholstered in leather; in perfect condition; price, $25. E. B. S., Ossining, N. Y.

DON'T FAIL

to hear Mr. B. A. Gramm's talks on

The Logan

at the New York Automobile Show, 69th Regiment Armory, Section E, Basement

Logan 1906 Line

Runabout	10 H. P.	Air Cooled
Light Touring Car	20 H. P.	Water Cooled
Large Touring Car	30 H. P.	Water Cooled
Light Delivery Car	10 H. P.	Air Cooled
2-Ton Delivery Truck	30 H. P.	Water Cooled
20 Passenger Bus	30 H. P.	Water Cooled

Some Exclusive Logan Features

Equalized Spring Trussed Frame which absorbs many jolts and jars which would otherwise go to engine and occupants.

Sliding Gear Transmission in which it is impossible to strip the gears.

Transmission Brake operated by reversing clutch lever.

High speed gear controls all speeds from one mile per hour to limit.

Special Fly Wheel Construction which gives one fifth more power from cylinders of same bore and stroke.

Simple in operation—Two levers and one pedal control all gears, brakes and clutch.

Write for Catalogue A-124, describing these and other features.

The Logan Construction Co.

Chillicothe, Ohio

"THAT CAR OF QUALITY"

FOR SALE—Packard Model L, in A1 condition, fully equipped with lamps; price $2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price $2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for $1,00 0if taken at once. Bates-Odenbret Auto Co., Milwaukee, Wis.

Scrap Auto Tires
We Buy Them
LAUN-CARLSTEN CO., 90 Metropolitan Blk., Chicago

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, $25; double cylinder 8 H. P. castings, $40; four cylinder 16 H. P. castings, $95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price $1,000. Ralph E. Clarke, Coldwater, Mich.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and $1, direct to consumer. Coils, carbureters and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

AUTOMOBILE DEALERS EVERYWHERE—We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard $1,400 side entrance touring cars, 20 H. P. double opposed engine, and $750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipment made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

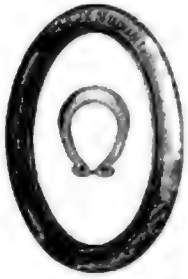
$300 GROUT SURREY. Thoroughly overhauled; fine condition. Dr. Frank Graham, Tennessee Trust Bldg., Memphis, Tenn.

FOR SALE—12-15 H. P. touring car in good condition; cost $1,400, will sell for $500. Write for particulars to F. R. Morrison, Ashtabula, O.

Digitized by Google

Majestic AUTOMOB[ILE] SPECIALTIES ARE T[HE] BEST

WE ARE HEADQUA[RTERS] FOR
Everything for the [Au]tomobile



Majestic Detachable Clincher Tires

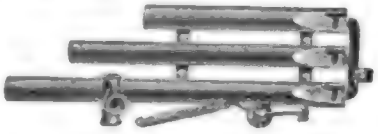
as good as any—with a full guarantee—but discounts greater. It will pay you to let us show you our proposition.

Majestic Lamps

are good lamps and prices the lowest.

Majestic 3-Tube Horns

at prices that will startle. Brass throughout. Perfectly toned and of the best construction.



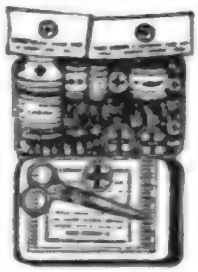
Manhattan Storage Co.

42 and 44 Cortlandt St., New York

WE WILL EXHIBIT AT THE FOLLOWING AUTO SHOWS:

New York, Madison Square Garden, January 13 to 20; Space 203. Chicago Coliseum, February 3 to 10; Space 269-270. Boston, Mechanics Hall, March 10 to 17; Space 131-132

Protection for Automobilists



Sixteen articles in a metal case for everybody who is liable to injury. Bandages, Dressings, Remedies. Quality Guaranteed. Send us your address and we will send the case; if you are satisfied after examination, send us one dollar; if not, return the case at our expense. Every automobilist ought to have one. Send for circular.

U. S. Emergency Case Co.
11 Home Bldg., Utica, N. Y.

LEA TIRE PUMP

makes pumping easy. Has adjustable crank for short or long stroke. No backache, no "puffing." Gives same pressure on all tires. They last longer.
Book B illustrates it. Write to-day.
Ask also for proposition to agents.

William S. Jones
112 N. Broad Street
Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

HYATT ROLLER BEARING CO.
Harrison, New Jersey

ARE YOU FROM MISSOURI?

INDEX TO ADVERTISEMENTS

Acetylene Gas Illuminating Co... 89
Adams Co. ... 78
Adland Motor Co. ... 85
Armour Co. ... 87
American Battery Co. ... 85
American Coil Co. ... 85
Apperson Bros. ... 85
Aster Co. ... 85
Atwood Mfg. Co. ... 85
Austin Automobile Co. ... 85
Auto Brass & Aluminum Co. ... 85
Automobile Club of America ... 85
Automobile Equipment Co. ... 85
Badger Brass Mfg. Co. ... 85
Baker Motor Vehicle Co. ... 85
Baldwin Chain & Mfg. Co. ... 85
Ball-Fintze Co. ... 85
Beaver Mfg. Co. ... 85
Berkshire Automobile Co. ... 85
Billings & Spencer Co. ... 85
Blomstrom, C. H., Motor Co. ... 85
Blood Bros. Automobile Machine Co. ... 90
Borbein, H. F., & Co. ... 85
Boston Auto Gage Co. ... 85
Bowser, S. F., & Co. ... 85
Brennan Mfg. Co. ... 85
Briscoe Mfg. Co. ... 85
Brown, W. H. ... 85
Brown-Lipe Gear Co. ... 85
Buckeye Mfg. Co. ... 85
Buckeye Wheel Co. ... 85
Byrne Kingston Co. ... Cover
Cadillac Co. of Illinois ... 85
Cadillac Motor Car Co. ... 85
Carbondale Chemical Co. ... 85
Carpenter Steel Co. ... 85
Champion, Albert, Co. ... 85
Chicago Auto Heater Co. ... 85
Chicago Automobile Show ... 85
Cleveland Motor Car Co. ... 85
Coey, C. A., & Co. ... 85
Continental Caoutchouc Co. ... 85
Continental Engine Co. ... 85
Continental Motor Mfg. Co. ... 85
Coops, C. W., Co. ... 85
Corbin Motor Vehicle Corp. ... 87
Correspondence School of Auto Engineering ... 85
Corwin Mfg. Co. ... 85
Cramp, Wm., & Sons, Ship & Engine Building Co. ... 84
Crawford Automobile Co. ... 85
Cullman Wheel Co. ... 85
Daimler Mfg. Co. ... 85
Dayton Electrical Mfg. Co. ... 85
Dayton Motor Car Co. ... 85
Diamond Chain & Mfg. Co. ... 85
Diamond Rubber Co. ... 85
Dietz, R. E., Co. ... 85
Dixon, Joseph, Crucible Co. ... 85
Dolson Automobile Co. ... 85
Duquesne Construction Co. ... 85
Dyke, A. L., Auto Supply Co. ... 85
E. H. V. Co. ... 85
Eclipse Buggy & Mfg. Co. ... 85
Edmunds & Jones Mfg. Co. ... 85
Eldredge Electric Mfg. Co. ... 85
Electric Storage Battery Co. ... 85
Electric Vehicle Co. ... 85
Elmore Mfg. Co. ... 85
Excelsior Supply Co. ... 85
Fairmount Engineering Works ... 85
Fellwock Autotop Co. ... 85
Firestone Tire & Rubber Co. ... 85
Fisk Rubber Co. ... 85
Ford Motor Co. ... 85
Franklin, H. H., Mfg. Co. ... 85
Frazier, W. S., & Co. ... 85
G & J Tire Co. ... 85
Gabriel Horn & Mfg. Co. ... 85
Garford Co. ... 85
Gauss, L. T. ... 85
Gilbert Mfg. Co. ... 85
Githens Bros. Co. ... 85
Goodrich, B. F., Co. ... 85
Goodyear Tire & Rubber Co. ... 85
Gray & Davis ... 85
Ham, C. T., Mfg. Co. ... 85
Hardy, R. E., Co. ... 85
Harris, A. W., Oil Co. ... 85
Hartford Rubber Works ... 85
Hartford Suspension Co. ... 85
Hayes Mfg. Co. ... 85
Haynes Automobile Co. ... 85
Herz & Co. ... 85
Hofeller Brass Foundry Co. ... 85
Holley Bros. Co. ... 85
Hyatt Roller Bearing Co. ... 85
Imperial Brass Mfg. Co. ... 85
Importers Co. ... 85
Jeffery, T. B., & Co. ... Cover
Jones Speedometer ... 89
Kimball, C. P., & Co. ... 85
Kirchberger, M., & Co. ... 85
Knoblock-Heldeman Mfg. Co. ... 85
Knox Automobile Co. ... 85
Kokomo Rubber Co. ... 85
Leather Tire Goods Co. ... 85
Lester, E. F. ... 85
Lexington Hotel ... 85
Light Mfg. & Foundry Co. ... 85
Link Belt Machinery Co. ... 85
Lobee Pump Co. ... 85
Locomobile Co. of America ... 85
Logan Construction Co. ... 85
London Auto Supply Co. ... 89
Long Mfg. Co. ... 85
Lozier Motor Co. ... 85
McClellan, Chas. P. ... 85
McCord Co. ... 85
McDuffee Automobile Co. ... 85
Madison-Kipp Lubricator Co. ... 85
Madison Square Garden Show ... 71
Manhattan Storage Co. ... 85
Marion Motor Car Co. ... 85
Marlborough Hotel ... 85
Matheson Motor Car Co. ... 85
Mead Motor Co. ... 85
Michelin Tire, American Agency ... 85
Miller, Chas. E. ... 85
Miller Signal Co. ... 85
Milwaukee Steel Foundry Co. ... 85
Mitchell Motor Car Co. ... 85
Moline Automobile Co. ... 85
Monon ... 85
Morgan, W. J. ... 85
Morgan & Wright ... Cover
Motor Directories, Inc. ... 85
Motor Age ... 85
Motor Car Equipment Co. ... 85
Motor Car Specialty Co. ... 85
Motor Car Supply Co. ... 90
Mutty, L. J., Co. ... 85
Myers-Dayton Top Co. ... 85
National Brazing Co. ... 85
National Motor Vehicle Co. ... 85
National Spring & Wire Co. ... 85
Newmastic Tire Co. ... 85
New Process Rawhide Co. ... 85
N. Y. & N. J. Lubricant Co. ... 85
New York Gear Works ... 85
Nicholsburg, H., Mfg. Co. ... 85
Nordyke-Marmon Co. ... 85
Northern Mfg. Co. ... 85
Olds Motor Works ... 85
Oliver Typewriter Co. ... 85
Owen Chemical Co. ... 85
Pacific Tucking & Mfg. Co. ... 85
Packard Electric Co. ... 85
Packard Motor Car Co. ... Cover
Pardee-Ullman Co. ... 85
Pedersen, J. T. ... 90
Pennsylvania Rubber Co. ... 87
Pierce, George N., Co. ... Cover
Pittsburg Reduction Co. ... 85
Pittsfield Spark Coil Co. ... 85
Pope Motor Car Co. ... 85
Prest-O-Lite Co. ... 85
Railway Appliances Co. ... 85
Rainier Co. ... 85
Rajah Auto Supply Co. ... 85
Reo Motor Car Co. ... 85
Rhodes, J. H., & Co. ... 85
Robert Instrument Co. ... 85
Rose Mfg. Co. ... 85
Royal Battery Co. ... 80
Royal Motor Car Co. ... 85
Rubay, Leon ... 85
Rubber Goods Repair Co. ... 85
Rushmore Dynamo Works ... 72
St. Louis Motor Car Co. ... 85
Saks & Co. ... 85
Schrader's, A., Son ... 85
Shawver Co. ... 85
Shelby Steel Tube Co. ... 85
Skinner & Skinner ... 85
Spicer Universal Joint Co. ... 85
Splitdorf, C. F. ... 85
Springfield Metal Body Co. ... 85
Standard Roller Bearing Co. ... 85
Stearns, F. B., Co. ... 85
Steel Ball Co. ... 85
Stevens, J., Arms & Tool Co. ... 85
Stitch-in-Time Vulcanizer Co. ... 85
Stolp Mfg. Co. ... 85
Streit, A., Machine Co. ... 85
Supplementary Spiral Spring Co. ... 85
Swinehart Clincher Tire & Rubber Co. ... 87
Syracuse Aluminum & Bronze Co. ... 85
Temple, Ralph ... 85
Thomas, E. R., Motor Co. ... 85
Thompson, Chas. A., Co. ... 85
Timken Roller Bearing Co. ... 85
Tingley, Chas. O., & Co. ... 85
Trefert Gas Engine Co. ... 85
U. S. Electric Sign Co. ... 85
U. S. Emergency Case Co. ... 85
U. S. Jack Co. ... 85
Veeder Mfg. Co. ... 85
Walker, E. C., Co. ... 85
Waltham Mfg. Co. ... 85
Warner Instrument Co. ... 85
Way Muffler Co. ... 85
Wayne Automobile Co. ... 85
Weber, O. F., Co. ... 85
Weed Chain Tire Grip Co. ... 85
Weiss, Mat ... 85
Welch Motor Car Co. ... 85
Western Oil Pump Co. ... 85
Western Tool Works ... 85
Wheeler & Schebler ... 85
White Sewing Machine Co. ... 85
Whitlock Coil Pipe Co. ... 85
Whitney Mfg. Co. ... 85
Willard Storage Battery Co. ... 85
Willis, E. J., Co. ... 85
Winton Motor Carriage Co. ... 85
Witherbee Igniter Co. ... 85
Wolverine Auto & Commercial Vehicle Co. ... 85
Wray Pump & Register Co. ... 85

When Writing to Advertisers, Please Mention Motor Age.

Digitized by Google

Vol. VIII No. 17 CHICAGO, OCTOBER 26, 1905 Ten Cents a Copy

MOTOR AGE

THE car that has been consistently successful in the past can be depended upon to be even more successful in the future. Each successive model has added to the Packard record for endurance and reliability, and that unequaled smoothness of running. The latest model, the Packard "24," upon which will be concentrated every thought and every facility of the Packard factory during the coming season, has already proven itself to be the best thing we have ever turned out. On June 8th, the first car of this model made a run of three hundred miles from Detroit to Chicago in the total elapsed time of 12½ hours, the running time 11 hours, carrying from five to six passengers. After a night's rest in Chicago, the car made the return journey on the following day, June 9th. This severe test of six hundred miles was made without repairs or replacements, except to tires.

Price, (with standard equipment) $4,000 f. o. b. Detroit

Write for Catalogue and name of the Packard dealer nearest you

PACKARD MOTOR CAR COMPANY, Detroit, Mich., U.S.A.

New York Branch: 1540 Broadway. Member Licensed Automobile Manufacturers.

The DeHaven Brothers

are twins

"Two peas in a pod" will have to content themselves with second prize.

Just how these brothers identify each other every morning is a puzzle to us.

During the time they are not busy being twins they operate a garage at 83-85-87 S. Center Ave., Chicago, and build automobiles for specially particular people.

(One of the fastest machines in Chicago was made by the DeHavens.)

One of these brothers told us the other day (we haven't the slightest idea which one it was) that Morgan & Wright tires have given a quality of service on the cars quartered with them that has been "head and shoulders" above that given by other brands.

And because this has been positively and repeatedly proven, several of their customers have swapped their tire troubles for Morgan & Wright tires.

There is no method of making friends equal to the method of making good.

MORGAN & WRIGHT, Chicago

309 Michigan Avenue

PHILADELPHIA—Cor. Broad and Vine Sts.
BOSTON—228 Columbus Av.
CLEVELAND—347 Huron St.
DAYTON—417 E. 5th St.
DETROIT—265 Jefferson Av.
NEW YORK—214 W. 17th St.
SYRACUSE—212-214 S. Clinton St.
MINNEAPOLIS—708 Hennepin Av.
ATLANTA—25 Edgewood Av.
ST. LOUIS—558 Vandeventer Av.
DENVER—1562 Broadway.
LOS ANGELES—940 S. Main St.
SAN FRANCISCO—1067 Mission St.
PORTLAND, ORE.—86 Sixth St.

Digitized by Google

1000 MILES WITHOUT A SINGLE ADJUSTMENT

won the GLIDDEN TROPHY for the

PIERCE

There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads. The Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

The George N. Pierce Company
BUFFALO, N. Y.

Members of Association of Licensed Automobile Manufacturers

Manufacturers of Pierce Cycles

Digitized by Google

THE most enjoyable days for touring of all the year are yet to come, but a perfect day is made miserable if the car you drive is unreliable. The Rambler is an ideal car for equipment.
Because of its simplicity every member of the family can run it.
There's only one lever to operate, giving two speeds forward, neutral and reverse.
The fact that one hand controls the Rambler makes it the car most suitable for reasonable speed, perfect cooling and reliability.

Call at any of our branches for a road demonstration and, at the same time, ask for a copy of the Rambler Magazine.

MAIN OFFICE AND FACTORY KENOSHA, WISCONSIN NEW YORK AGENCY: 134 West 76th st

THOMAS B. JEFFERY & COMPANY

Digitized by Google

MOTOR AGE

Vol. VIII No. 18 CHICAGO, NOVEMBER 2, 1905 Ten Cents per Copy

"Packard 24"

A CAR as good as the Packard could not be the result of one man's work or the creation of one man's brain. It is only possible by cumulative effort year after year, of the great organization of skilled specialists. It is like no other car. It can be measured by no other standard. It is a combination of perfect parts, every one of which reflects the price of the man who made it.

Price, (with runabout equipment) $4,000 f. o. b. Detroit

Write for Catalogue and name of the nearest Packard dealer

PACKARD MOTOR CAR COMPANY, Dept. Detroit, Michigan

New York Branch, 1540 Broadway

Member Association Licensed Automobile Manufacturers

V. L. Emerson

is the General Manager of the
American Motor Car Co., Cincinnati

These people are comparatively new in the automobile manufacturing game, tho you would never guess it to see the kind of a car they put up.

We feel pretty dead sure that they are going to command a big business, for the simple reason that oaks can't help but evolve from acorns when the acorns are good ones.

Mr. Emerson believes in being sure he is right before he asks the public to buy his cars, which is a mighty good "acorn." For instance, here is a sample of his tire test :

"In August I put a new set of your 3-inch tires on my light speed car and went against some of the big ones at Coney Island, establishing a world's record for two miles from a standing start. I had to make better than fifty miles on the turns and above seventy miles on the straight, which is a very trying test on so light a tire. Usually one race of this kind uses up a set of cases, but in this instance your tires have been an exception, as I have covered more than four thousand miles with the same tires since I raced them, including twelve important races, in which I scored first eleven times and got second place once.

The outer casing of the rubber has worn down on my right wheels, but **there is not a cut or separation in the cases and I have not had them off the rims.**

It strikes us that that record ought to be tire guarantee enough for the patrons of the American Motor Car Co.

MORGAN & WRIGHT, Chicago

PHILADELPHIA BOSTON CLEVELAND DAYTON DETROIT NEW YORK SYRACUSE MINNEAPOLIS
ATLANTA ST. LOUIS DENVER LOS ANGELES SAN FRANCISCO PORTLAND, ORE.

Classification Distinctive . . . WHY?

The Lightest, the Strongest, Most Durable, Most Efficient, Best Finished. Attractive in Rich Finish and Design, Simply Manipulated.

Absolutely Safe, Perfectly Clean, Best to Ride, Most Economical to Keep. Always Satisfactory. A Carriage Any Lady Can Drive.

THE BAKER ELECTRIC

SEND FOR OUR BK CATALOG

THE BAKER MOTOR VEHICLE CO. Cleveland, Ohio

Chicago Agents: PARDEE-ULLMANN CO., 1218-20 Michigan Avenue, Chicago

Digitized by Google

1000 MILES WITHOUT A SINGLE ADJUSTMENT

won the GLIDDEN TROPHY for the

PIERCE

There can be no more conclusive proof of the superiority of the Pierce Great Arrow chassis for touring purposes. An American car for American roads. The Pierce is the triumphant result of six years' experience with the finest materials and a thorough knowledge of American conditions.

The George N. Pierce Company
BUFFALO, N. Y.

Members of Association of Licensed Automobile Manufacturers

Manufacturers of Pierce Cycles

Digitized by Google

Rambler

Don't Stable Your Car Because The Snow Flies

Motoring on a keen, bright day when the air is clear and bracing, is one of the greatest pleasures of the year. But the car must be right, there must be no annoying stops for tinkering and adjustment when the fingers become cold and the temper hot.

Insure the pleasure of your ride by using a RAMBLER, the car of staunch dependability that you don't have to tinker with.

The car of power and simplicity that obeys your will and serves you all the time.

Our Catalogue or The Rambler Magazine will tell you how and why. Both are at your service.

THOMAS B. JEFFERY & COMPANY :: KENOSHA, WIS.

BRANCHES: CHICAGO MILWAUKEE BOSTON PHILADELPHIA SAN FRANCISCO

NEW YORK AGENCY: 134 West 38th Street

Representatives in all leading cities

Digitized by Google

MOTOR AGE

Vol. VIII No. 23 CHICAGO, DECEMBER 7, 1905 Ten Cents per Copy

Packard

BEFORE the design of the "Packard 24" was accepted by the Packard Company, three cars were built and driven 21,000 miles over every kind of road and grade that exists between Michigan and Massachusetts.

PACKARD MOTOR CAR COMPANY

Dept. 2 Detroit, Michigan

New York Branch, 1540 Broadway

Members Association Licensed Automobile Manufacturers

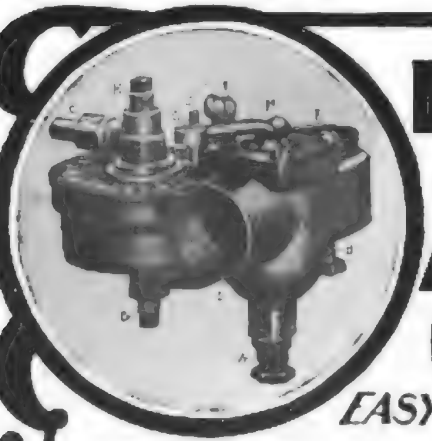
Digitized by

We most heartily extend to our patrons and friends everywhere our sincere best wishes for a Holiday Season of surpassing Good Cheer.

We are not unmindful of the good-will that has been so generously manifested on the part of our patrons during the past year; and for this, and for the constantly increasing liberality of their patronage, we are deeply grateful.

We pledge you that an earnest effort will be made to merit a continuance of your valued confidence.

Morgan & Wright
Chicago



KINGSTON
1906 TYPE-K-
AUTOMATIC CARBURETOR

EASY TO UNDERSTAND EASY TO OPERATE

Fuel controlled entirely by equalizing automatic air valves.
Will increase POWER and CONTROL of any 1905 FORD or OLDS car, or money back.
Positively will not accumulate fuel in, or CLOG LONG INLET PIPES.
Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.
Built for business by the oldest manufacturers in the business.
OVER 31,000 KINGSTON CARBURETORS IN USE

KINGSTON MUFFLER

IMPROVED FOR 1906

BYRNE, KINGSTON & CO.,
KOKOMO, INDIANA, U. S. A.

Digitized by Google

This is the Pierce Great Arrow 28x32 H. P. car with straight tonneau body, cape top and folding glass front. Price $4,000. Cape top, extra, $200.

PIERCE

The Pierce Arrow is an American car—the best American car that has been made—better in proportion to its cost than any inported French car—better for American use, American roads and the American motorist. It offers satisfaction, minimum of expense in running, perfect service, and can be operated by the owner.

Catalogue and Descriptive literature on request

The George N. Pierce Company, Buffalo, N. Y.

Member Association Licensed Automobile Manufacturers.

The Pierce Arrow exhibited in Madison Square Garden only.

List of Dealers

Boston, J. W. Maguire Co., 745 Boylston St.
Chicago, H. Paulman & Co., 1321 Michigan Ave.
New York, Harrolds Motor Car Co., Broadway, 58th-59th Sts.
Pittsburg, Banker Bros. Co., Baum and Beatty Sts.
Baltimore, Southern Auto Co., 2021 Maryland Ave.
Buffalo, The George N. Pierce Co., 752 Main St. (retail).
Detroit, J. P. Schneider, 189 Jefferson Ave.
Denver, The George N. Pierce Co., 1643 California Ave.
Hartford Conn., The Miner Garage Co., 120 Allyn St.
Houston, Tex., Hawkins Auto & Gas Engine Co.
Kansas City, Mo., E. P. Moriarty & Co., 1612 Grand Ave.
Los Angeles, Bush & Burge, cor. 7th and Main Sts.
Louisville, The Zorn-Strauss Co., Inc.
Milwaukee, Hibbard Automobile Co.
Ottawa and Montreal, Wilson & Co., 142 Bank St.
Oakland, Cal., The George N. Pierce Co., 1013 Clay St. (wholesale).
Philadelphia, Foss-Hughes Motor Car Co., 201 N. Broad St.
Portland, Me., J. A. Dowling.
Providence, R. I., The Shepard Company.
Rochester, U. S. Automobile Co., 21 Plymouth Ave.
San Francisco, Mobile Carriage Co., Golden Gate Ave. and Gough St.
Saratoga Springs, W. L. Hodges, 16 Woodlawn Ave.
Scranton, Pa., Standard Motor Car Co.
Springfield, Mass., E. R. Clark Auto Co., 117 Lyman St.
Syracuse, Amos-Pierce Auto Co., 109 S. State St.
St. Louis, Western Auto Co., 4701 Washington Blvd.
St. Paul, C. P. Joy Auto Co., 368 Minnesota St.
Toronto, Auto & Supply Co., Ltd., 24 Temperance St.
Troy, N. Y., Troy Auto Exchange, 22 Fourth St.
Utica, N. Y., Utica Motor Car Co.
Geneva, N. Y., J. A. Place.
Portland, Ore., H. M. Covey.
Seattle, Wash., Broadway Auto. Co.

Digitized by Google

Rambler

WINTER MOTORING while enjoyable, is severe upon both car and operator. ¶ The Model 15 RAMBLER, 35-40 horse-power, here shown, has power and stability to withstand the mechanical strain, while the simplicity of control and dependability of operation reduces the driver's cares to the minimum. ¶ It has a four-cylinder vertical motor, sliding gear transmission and double chain drive with many details that will interest you.

¶ Just your address — that's all.

THOMAS B. JEFFERY & COMPANY :: KENOSHA, WIS.

BRANCHES: CHICAGO MILWAUKEE BOSTON PHILADELPHIA SAN FRANCISCO
NEW YORK AGENCY: 134 West 38th Street
Representatives in all leading cities

Digitized by Google

JUL 2 - 1943

Digitized by Google